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CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

Vol. XXI MARCH-APRIL, 1949 No. 2

FIG. 23. The longer leaves of Curt Backeberg's *Austrocylindropuntia verschaffeltii* shown a distinct step in his theory of evolution.

CACTUS AND SUCCULENT JOURNAL

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Vol. XXI MARCH-APRIL, 1949 (PRICE 50c) No. 2

New Ways in Cactology, Part II ..... Curt Backeberg 35
Factors Affecting the Flowering of Plants ..... Richard Kolasinski 37
Cactus Pollen—Another Cactus Oddity ..... E. B. Kurtz, Jr. 40
The Genus *Sansevieria* ..... H. C. Shetrone 42
Arizona Cacti, No. 2 ..... R. C. Proctor 44
New Species from Peru ..... John Akers 45
Blühende Kakteen Reprint, 8th Installment ..... Center Section
A Naturalist's Diary on the Mexican Wesct Coast, Part IV ..... E. Yale Dawson 51
Desert Observations ..... Scott E. Haselton 54
Phyllocactus Gaertneri, Translation ..... Karl Schumann 56
Borzicactus morleyanus ..... John Poindexter 58
Question and Answer Column ..... Harry Johnson 60
Rare Succulents ..... H. Jacobsen 61
Cereusly Speaking ..... John E. C. Rodgers 61
Spine Chats ..... Ladislaus Cutak 63

FORTY-NINE CONVENTION

Forty-nine well furnished bungalows, grouped under the towering fan palms of a sixteen acre park will be our lodging headquarters for our Forty-Nine Convention. Together they form Autopia Motor Lodge, one of Arizona's finest resort spots. The lodge is on the eastern highway entrance only ten minutes from the heart of Phoenix and ten minutes from our Convention sessions in Webster Auditorium of the Desert Botanical Garden.

From the grounds can be seen Camel Back Mountain, the Supersitions and other land marks of Arizona's Valley of the Sun. Spacious lawns, cacti, orange trees and flowers frame all the views. Stucco walls and tile roofs of Spanish architecture add their bits of romance to the scene.

Air cooling systems insure pleasant rest in comfortable beds on the warmest of summer nights. All rooms are adequately furnished even to telephones. There are numerous private patios for sunbathing and comfortable seats in the shade for those who prefer to just sit and talk. An open air swimming pool adjoins a dance floor. Shuffle boards, table tennis, badminton, putting greens, croquet courts, and archery courses will be on hand to use up any excess energy one may have.

Your car may be parked at your own door without charge or left for servicing in Autopia's service station. Food and drink (no liquor) are to be found in the attractive cafe in a corner of the grounds.

Winter visitors are gladly paying fantastic rates for the use of these facilities. We have been offered them at the nightly rates of $2.00 per person in double beds, $2.50 in single beds, $3.00 for one person to a room and $3.50 for one person to a cottage. These rates include the use of the pool and other recreational facilities. Advance reservations will be necessary, so tell us *now* of your intention to attend and reservation blanks will be sent to you at the proper time. Remember the dates: July 2-5, 1949.

HOWARD E. GATES, *Convention Chairman*
Box 247, Corona, Calif.

NEW COLOR PROCESS

Providing our new plant for making color prints is completed on schedule, we will have our first showing in the May-June Journal. Our first picture will be an Orchid Cactus which will be followed with FULL PAGE pictures of cacti and succulents as they flower. We plan to offer a series of 7x10 color prints of cacti on a subscription basis similar to "Bluhende Kakteen," four to six prints each quarter for $7.50 per year. These prints will be in NATURAL COLOR and superior to Kodachrome reproductions. Watch for the next JOURNAL for announcement.

OREGON CACTUS AND SUCCULENT SOCIETY

We organized and elected officers as follows, December 8, 1948:

President, Mr. James B. Kennedy, 3014 S.E. 9th Ave., Portland 2, Ore.

Vice President, Mrs. J. B. Lepley, 5706 S.E. 49th Ave., Portland 6, Ore.

Secretary, Mrs. Oscar T. Tinkle, 8414 S.W. Blosick, Portland 19, Ore.

Treasurer, Mrs. Laraine Werner, Garden Home, Ore.

FROM AUSTRALIA

Mr. A. Burke, in charge of succulents at the Botanic Gardens in Melbourne, reports that about a thousand species of cacti and the other succulents comprise their collection, after two years' effort. Great credit is due the Director, Mr. A. W. Jessup and the Superintendent, Mr. W. Gray in their effort to obtain seeds and plants for the succulent section of the Gardens.

IDENTIFICATION OF PLANTS

As a special service to the members of the Society, the Research Board will attempt to identify any species of collected cacti which is sent to them for that purpose. In sending in specimens for identification be sure to send a representative plant, in flower whenever possible, with data as to the place of collection and when possible, photographs or data regarding associated vegetation. Send specimens to the Research Board, 820 W. 115th St., Los Angeles, Calif.

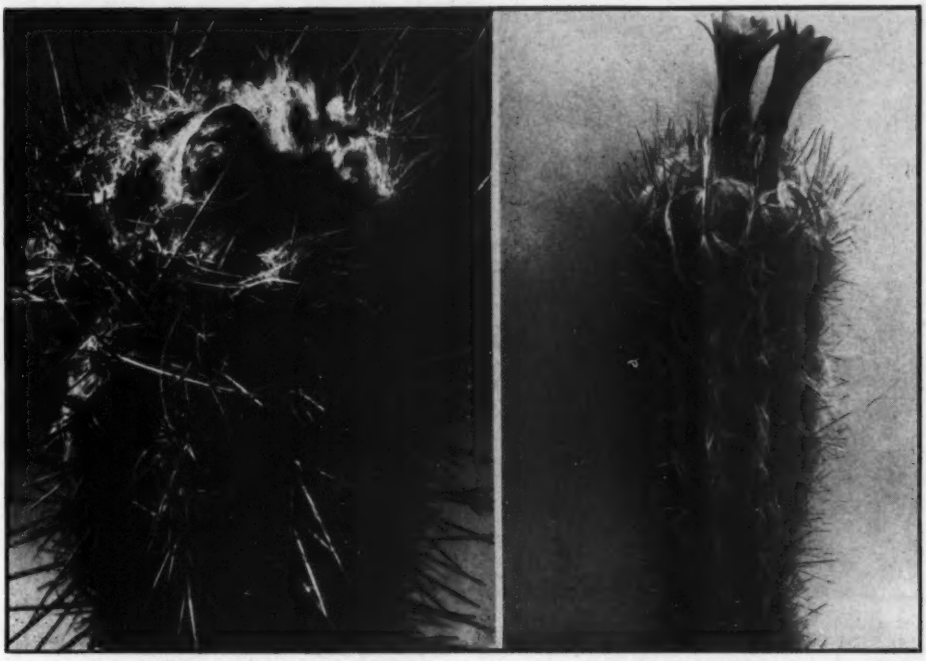


FIG. 24. *Morawetzia Doelziana* showing the specialized flower region which is a true cephalium—flowers always appear on the top.

NEW WAYS IN CACTOLOGY

PART II

By CURT BACKEBERG

Translation by JOHN POINDEXTER

In Marshall's introductory text the following genera established by me are withdrawn:

Soehrensia: See below.

Armatocereus: Borg's note "appears not well founded" was considered sufficient to include this genus with *Lemaireocereus!* The type species of *Lemaireocereus* is *Cereus havosus* Br. & R., terminal blooming with wool and bristles. The forms with lateral flowers and felt with hair only at the axils have been withdrawn by me, and placed in the genus *Neolemaireocereus.* Marshall unites these two genera. *Armatocereus* has spiny, narrow tubed flowers! It is close to *Brachycereus* and forms a connecting link with the vegetation of the Galapagos Island tree *Cereus* and probably *Gymnanthocereus.* Marshall has overlooked the fine details in all these groups; the inclusion of *Armatocereus* destroys what clarification we have made of this group to date.

Chilenia: In this case the name was already in use and had to be withdrawn in favor of a new name. I did not consider the matter long enough before naming the genus. Obviously Marshall as well as Rose have been conscious of the fact that under *Neoporteria* two genera have been lumped together. *Neoporteria:* Reddish flowers which are closed in the middle. *Neochilenia:* (As the second genus is finally named). Fully open, rotate, funnelform flower. See also below. The two genera have absolutely nothing to do with one another.

Lemaireocereus: (Emend. Backeberg). Marshall considers the *Lemaireocereus* of Britton and Rose as "perfectly defined." Aside from the fact that some species have terminal flowers and some lateral flowers, this alone being sufficient grounds for a division, the genus is certainly not well defined with respect to other sharply differing characters which were brought

FIG. 25. *Neoporteria nigrihorrida* Backbg. showing typical *Neoporteria* flowers—always bright red, inner perianth segments closed over the style, stalky tube almost naked, fruit also almost naked.

out by Rose. The problem of my genus *Ritterocereus* also belongs here and has been discussed in my literature.

Cephalocereus: According to Marshall this genus has again become a melting pot, for example: *Cephalocereus:* (Emend Backeberg). (The case is also treated carefully by Buxbaum). Flowers provided with bristle-like hairs. *Austrocephalocereus:* Flowers naked. The cephalia are also different. See below.

The name, *Cephalocereus* merely indicates that there is a cephalium. Genera with a terminal cephalium are unrecognized by Britton and Rose (*Arrojadoa*). In spite of this, he placed my genus *Morawetzia* (see below) in *Oreocereus,* although a terminal cephalium exists here. It is futile to ask myself if Marshall has carefully evaluated the situation. The periodicals will certainly not be able to complain for lack of material for publciation, as it will be necessary to clarify the situation anew. Unfortunately the ballast of synonyms is already there and must remain.

These are the genera that were brought up in Marshall's introductory observations. Marshall obviously thinks it unnecessary to go further into my extensive literature on the subject. Either he has not studied this literature, in which case his work is superficial, or he is familiar with it, in which case it is not proper to summarily set aside my studies. This would give the reader a false picture.

Regarding the individual comments on different genera established by me which appear in the body of Marshall's contribution, I will limit myself to pointing out the errors.

Austrocylindropuntia, Tephrocactus, Corynopuntia: According to Marshall these names bring more confusion than usefulness and "must be thrown out." I don't know where the great confusion lies. The evolution of these groups is not sufficiently covered by Marshall, nor is the study of parallel evolutionary stages. Already these genera have been of the greatest usefulness since they show clearly recognizable forms which are limited to distinct areas. It is not true that one cannot separate *Tephrocactus* from the *Cylindropuntia* because the plants forms intergrade. This indicates a limited knowledge of the South American Opuntias; *Tephrocactus* is always constant if it is considered in the sense with which I limited it. Where plants elongate after they were first spherical, we have reduced forms of *Austrocylindropuntia.*

Brazilicereus, Austrocephalocereus (see below), *Coleocephalocereus, Micranthocereus:*

FIG. 26. Buds of *Mitrocereus* in felt-cap. Flower tube densely covered with wool and bristles and is decidedly different from *Pilocereus* flowers.

With respect to these genera I can here only refer to my literature.

Subpilocereus, Mitrocereus, Neobuxbaumia: These were all placed in *Pilocereus* thus forming an especially noteworthy "collective genus." They should all be considered one genus "as all botanists say we know them best." Since I have seen them all bloom, and also discovered a whole series of *Subpilocereus* I am interested in knowing who is more familiar with these plants than me, and where this man saw them. Consider the following alone:

Mitrocereus—thick woolly flowers and fruits.

Subpilocereus—Flowers varied, fruits naked, elongate, quite different from

Pilocereus—Flowers varied, fruit round.

It is said that the separation serves no useful purpose. This might be if there were no other differences. This is hardly the case.

To be continued

FACTORS AFFECTING THE FLOWERING OF PLANTS

From "The Spinal Column"—publication[1] of the Detroit Cactus and Succulent Society

By RICHARD KOLASINSKI

Much has been written about how to grow cacti to get them to bloom. A lot of this information is more confusing than helpful. Examples of this are formulas for soil mixtures that contain seven or eight different ingredients and contradictory cultural methods often found in books. As a result many cactophiles come to the conclusion that cacti are entirely different from other plants and that in order to get them to bloom, one must have a green thumb or use black magic.

Now nothing is farther from the truth. The same factors that control the blossoming of the day-lily in your garden or the dandelion in your lawn control the blossoming of the cactus on your window-sill. The purpose of this article will not be to add to the confusion by giving pet cultural methods for different cacti but rather to discuss the factors that decide whether or not any plant (cactus or garden) will bloom.

First of all in order to expect blossoms we must have a healthy mature plant. To be healthy a plant must be free of disease or an excess of insects, it must grow in a soil capable of feeding it, it must have moisture sufficient to enable it to grow but not excessive so that rot results. As to maturity, that is a variable factor depending on the individual plant. If we go into a garden in February and take a branch of Tamarix, root it in water and plant it out in the spring, it will blossom the same fall. For all practical purposes it has matured in a few months. A Lilac under similar conditions would take four or five years, an Oak tree ten or twenty. The same is true of our cacti. An Echinopsis or Notocactus or Rebutia offset may bloom a year after it has been removed from the parent plant. An Opuntia pad may take four or five years before it grows into a blooming size plant. A Carnegiea or Ferocactus may take many more years. Also a blooming size plant of Rebutia or Notocactus may be kept in a 2½" or 3" pot while a mature Opuntia may take a 12" or 14".

Once a plant has become mature, it blooms on the current season's growth, on the past season's growth, or on older growth. As an example of the first group, we have a hybrid Tea Rose. We can cut it almost to the ground in the spring and in a few months it is in blossom again. In the second group, we have the bush roses. If we were to cut them to the ground, they would produce growth but no flowers the first year. The next year flowers would be produced on the previous year's growth. In some cases once a branch has blossomed it never blossoms again. That is why when we prune berry bushes, we prune out branches that have already produced fruit.

If we study cacti we find that they too may be grouped according to the type of growth that produces blossoms. Thus the Echinocactanae bloom from the point of growth, and some Opuntias blossom from the current season's growth as does Eriocereus. Epiphyllums bloom on growth that is at least a year old, and that is true of Mammillarias and Echinocerei. Plants such as Rebutias and Lobivias bloom on older growth.

Now let us assume we have a healthy mature plant, what are the condtions required to bring it to bloom? The first and most important factor influencing blossoming is light. Some plants bloom during a short day and some during a long day. For instance early in the spring we

[1]Dues $2.00 per year. Publication only $1.00. Mrs. E. W. Comben, 15335 Princeton Ave., Detroit Mich.

have Tulips and Narcissi in bloom. They are short day plants. These are followed by long day plants such as Irises and Roses. In the fall we again have short day plants such as the Chrysanthemums.

To demonstrate the effect of light on the blossoming habits of plants, let's consider the Florist's Chrysanthemum. These plants are grown from rooted cuttings planted during early summer. Early varieties bloom during November and late during December. But—florists may have Chrysanthemums blossom almost any month of the year. How is this done? We will take two cases: Suppose the flowers are wanted in August. The cuttings are planted in the spring in outdoor beds with a framework over them. When they are supposed to bud, they are covered with a black cloth for several hours each day. Thus the plants are fooled into thinking the days are shorter and they bloom. Suppose blossoms are wanted in early spring. The mums are started in late fall and grown with extra light, then in the spring are covered with cloth to decrease the number of hours of light and thus induce buds. Thus we see that the amount of light a plant receives affects its budding.

Cacti may also be considered as short day or long day plants. In early spring we have short day plants such as Echinocereus, Lophophora, and Epiphyllum. Then we have long day plants such as Echinopsis, Thelocactus bicolor, Hamatocactus setispinus and Eriocereus Martinii. In the fall we again have short day plants such as Ariocarpus fissuratus.

In Chrysanthemum, the plant is started from a cutting, grows, blooms, and is discarded in a period of a few months. When we look at perennial plants that are kept over a period of years, we find that other factors besides light enter into the picture. Perennial plants go through a definite cycle each year in which there are one or more rest (dormant) periods, one or more growing periods and one or more blossoming periods.

If we go into our garden in early spring, we see Tulips in blossom. These are short day plants with a cycle something like this: Winter rest, short period of growth in spring, blossoms, rest during midsummer, period of underground growth in the fall. Next we have plants like the Oriental Poppy and the Iris that have a cycle about like the Tulip but with a longer spring growing period and blossoms during a longer day. Then some of us may have plants such as the Resurrection Lily. This rests in the winter, growth in spring, rest in the summer, blossoms in late summer. Finally we have plants such as the Chrysanthemum which rests in winter, grows all summer and then blooms during the short days of fall.

So we see that in addition to the right amount of light at the right time, we must also have dormant periods at the right time. Failure to provide a dormant period upsets the plant's cycle, sometimes with drastic results. For instance some botanists once took several species of deciduous trees and kept them growing through their winter dormant period. One of the trees in the experiment finally went dormant in early spring and instead of resuming growth when its time came, it stayed dormant through its growing period, through its second dormant period and finally resumed growth a whole year late. While the results of changing the cycle are not always as noticeable as the case mentioned, they often have an effect on the blossoming of the plants.

Now that we have demonstrated the importance of a rest period, just what conditions are required to induce a plant to become dormant? We know that potatoes kept in a cool dark cellar do not sprout, but as soon as the temperature rises the potatoes start to grow. If the potatoes are kept in a light cool cellar, they will turn green but will not sprout. So we see that temperature controls dormancy. In this case a cool temperature kept the potatoes dormant. But in our discussion of garden perennials, we saw that many of the spring flowering plants had a dormant period in midsummer when it is hot. So we find that most plants are dormant when it is cold and dry, some of them are dormant when it is hot and dry, some may be dormant when it is cold and damp, but we do not know of any that rest when it is hot and wet.

What applies to garden plants also applies to our cacti. They too go through a definite cycle each year and theoretically we could get any healthy mature cactus to bloom by duplicating the conditions under which it grows in its native habitat.

In practice we run into difficulties. There are very few cactophiles who have the knowledge, the time, and the facilities for individual care for their plants. The most that they can do is to furnish such conditions as are acceptable to the majority of their plants with special care being reserved for one or two choice plants such as the Christmas Cactus.

Now what is the cycle most acceptable to the majority of plants in our collections? In our observation, the plants need winter rest, spring growth, and in the case of the early blooming cacti such as Echinocereus, Chamaecereus, Epiphyllum and some Mammillarias there is a midsummer rest followed by fall growth. On some of the cacti we have not noticed the summer rest period. Among these are Opuntia, Eriocereus, Cereus, Nyctocereus, Ariocarpus. While

we did not observe a real summer rest period on Opuntias, there is a time when spring grown pads are becoming firm and later pads have not as yet started growing.

Now this cycle presents the cactophile with no difficulties except at the end of the fall growing period. If we study our weather conditions, we find that there is a six week lag between the temperature and light conditions. Thus December 21 is the shortest day of the year but February 1 is midwinter— the coldest time of the year. Also June 21 is the longest day of the year, but August is the hottest month. The result of this is that the days get quite a bit shorter in the fall before they get cold enough to induce a plant to become dormant. As most cacti grow native in comparatively sunny regions, this time lag is not important. But when grown in Michigan, this has an undesirable effect. This is not only because the days have become short in the fall, but also because the late fall months are usually quite cloudy. Also at this time we are moving our plants into our houses and thus further lessening the amount of light they receive. The result is etoliation, deformed growth and a general unhealthy condition of the plant.

The problem then is to get our plants dormant before the amount of light they receive is reduced too much. As we have already seen a low temperature induces dormancy. Now a house at 60° feels cool. At 50° it feels definitely cold. But 50° is often not low enough to keep a plant from continuing its growth—40° would be much better. This is particularly true of the more hardy cacti. How are we to accomplish this? One way is to raise pots out of the ground but to leave them outside as long as we dare. A week or two outside with the temperature falling to 45, 40 or even 35° will put the most stubborn cactus to sleep. Once dormant a slightly higher temperature does not seem to bother. And what is most important, once dormant we can keep many of our cacti with a minimum of light. In our greenhouse we accomplished the same result this year by using no artificial heat until the middle of December.

Now as we pointed out each plant has a different cycle and the low fall temperature while very satisfactory for most of the cacti was quite unsatisfactory for several Echeverias, *Cotyledon macrantha, Aloe Davyana, Crassula argentea* which started budding in late fall. Keeping the temperature low at this time tended to make them dormant too. This delayed budding so that *Crassula argentea* is starting to bloom a month late. Echeverias and Cotyledons are definitely stopped and mature Bryophyllums and Kalanchoes that should be in blossom will not bloom. So if any of the winter bloomers are desired in bloom, they will have to be kept in a warmer place.

In order to show the effect of this schedule on a typical collection, we will name the cacti that have bloomed for us during the past year. This list includes only cacti here in Michigan which did not receive individual care.

Opuntia—two species not definitely identified, *Wilcoxia Schmollii, Heliocereus speciosus, Eriocereus Martinii, Cleistocactus Baumannii, Echinocereus Fitchii, E. Reichenbachii, E. Pectinatus, Rebutia, Chamaecereus Silverstrii, Lobivia Pentlandii, Echinopsis multiplex* hybrid, *E. Eyreseii, Ariocarpus fissuratus, Lophophora Williamsii, Hamatocactus setispinus* (2 plants), *Stenocactus Ochoterenaus, S. lamellosus, Notocactus ottonis* hybrid, *Thelocactus uncinatus, T. bicolor, Pelecyphora aselliformis, Mammillaria bocasana* (over 300 blossoms), *M. gummifera, M. nigra,* and several others, *Epiphyllum* hybrid, and *Nopalxochia phyllanthoides.*

GROWING ORCHID CACTI

Regarding your request as to how we grow Epiphyllum hybrids in Oregon, I can only give my own experiences. Most of the plants that I have seen in this area are scrubby and yellow looking, even in greenhouses.

In the soil mixture I use plenty of cow fertilizer (well rotted). When the plants are making growth I give Vitamin B1 about every watering and Plant Chem Salts every two weeks. In winter I water them with *very* warm water as I do all my cacti. In summer I use water from the lily and fish pond as the water is always warm.

The branches of Dr. Houghton, Valencia, and Hermosus are 4 inches wide and 36 inches or more long. I have 13 kinds and all but one are covered with buds. Last spring I was given a cutting about 5 inches long; later it had two flowers and this spring it is quite a sizeable plant covered with buds. I don't know its name but the color is somewhat orange-salmon.

I put all my Orchid Cacti and Christmas Cacti in the lath house during summer months, also my Princess of the Night.

Mrs. Alice Dykes
Milwaukie, Oregon
March 1, 1949

EDITOR'S NOTE: We would like to know where the plants are kept in the winter and if they are allowed to go dormant; also the approximate temperature of the winter quarters.

What shall we call our Epiphyllum hybrids instead of Orchid Cacti?

Your editor suggests Epichiahyloaporoseleniheliozygophyllum (Epi-chia-hylo-aporo-seleni-helio-zygophyllum)!

NEW SPECIES

Mammillaria Schwarzii was described as a new species by E. Shurly in the January, 1949, issue of "The Cactus and Succulent Journal of Great Britain." The plant was discovered and named for Fritz Schwartz, the well known collector of San Louis Potosi, Mexico. The plant is near the *M. albicoma, M. prolifera,* and *M. Baumii* group.

CACTUS POLLEN — ANOTHER CACTUS ODDITY

By E. B. KURTZ, JR.

Research Fellow in Botany, University of Arizona, Tucson, Arizona.

Cacti have long been a source of interest because of their exotic and beautiful nature that is distinct from that of all other groups of plants. Many cactus flowers are also unrivaled for nocturnal beauty among plants, but there yet remains for cactus fanciers another unique and interesting cactus subject—*cactus pollen.*

To the unaided eye the yellow dust produced by the hundreds of stamens in cactus flowers appears to be nothing more than a powder of thousands of shapeless particles. This yellow dust in reality is composed of a multitude of microscopic male reproductive plant particles called "pollen grains." Rather than being shapeless, each pollen grain when viewed under a good microscope presents a new thing of beauty, in a world of the minute. Not only are the pollens of cacti beautifully sculptured, but the various designs and shapes of the pollen grains may also be distinctly different among the numerous species of cacti.

If a pinch of the pollen dust from *Carnegiea gigantea,* or giant cactus, is examined under the high power of a microscope[1] the individual pollen grains will be clearly seen (Fig. 1). It is immediately noticed that the grains are more or less spherical and are *small.* Actual measurement of the giant cactus grain shows that it is about 50μ in diameter, which means that over 500 grains could be lined up side by side along a line one inch in length! If the pollen grain is now closely examined three long stripes will be seen. These are germinal furrows that allow for the emergence of the pollen tube which will ultimately aid in fertilization of the young cactus seed. Pollen grains possess a very thick covering called "exine," and the germinal furrows are merely very thin areas of this exine. Further examination of the Sahuaro pollen grain shows that the exine is very minutely pitted, that is, the exine of each grain has thousands of very small indentations or pits. Examination of pollen grains of other cacti of the *Cereus* group; the barrel cacti, *Echinocactus;* the hedgehog cacti, *Echinocereus;* or pincushions, *Mammillaria,* shows that all these groups are alike as to pollen grain characters. They all have pollen grains that are spherical, very small, have three furrows, and possess pitted exine. It may seem as if cactus pollen grains are all alike, and monotonously so, but the giant cactus grain was discussed first so that the much more complicated and really beautiful grains of another cactus group, the Opuntias, would be more readily understood.

The pollen grains of *Opuntia* flowers are usually about 100μ in diameter, or twice as large as the pollen of the giant cactus. Furthermore, *Opuntia* pollen has a very distinctive shape, termed by mathematicians a cube and dodecahedron. This geometric configuration is most unusual because it is not found as a pollen grain shape in any plant family other than the Cactaceae. A cube and dodecahedron is just a fancy term for a solid figure having 18 faces, 6 of which are squares, and the remaining 12 faces are six-sided (hexagons). These faces are arranged symmetrically over the surface of the pollen grain (Fig. 2). All *Opuntia* pollen has this general shape, but the pollens of each species are nevertheless distinct. The subdivision of *Opuntia* commonly called "chollas" have pollen grains quite different from those of the other subdivision of *Opuntia,* the "prickly-pears." Figures 3 to 6 illustrate pollen grains from prickly-pears. It can be seen that all these grains possess the shape of a cube and dodecahedron as shown in Fig. 2. Also note that each of the six-sided faces or hexagons contains a definite object which is a germinal furrow. Since there are twelve hexagons on each grain, there are also twelve germinal furrows. The furrows may vary with different species. Some species have very flat and indistinct furrows as shown in Fig. 3, whereas *Opuntia fragilis* has twelve very prominent furrows (Fig. 6). Figures 7 and 8 illustrate pollen grains from chollas. The difference between these grains and those of the prickly-pear cacti is readily seen. The cholla pollen grains are not distinct cube and dodecahedrons; that is, the imagination must be used to find the twelve hexagons and six squares since the ridges are not distinct. Close examination of *Opuntia* pollen also shows that there are several small differences besides shape between pollen grains of chollas and prickly-pears (also between the different species) such as type of sculpturing of the surface or exine, size of the

[1] If the reader wishes to examine some cactus pollen, a suitable preparation may be made by putting some pollen on a microscope slide. Then add a drop of alcohol and mix so as to remove any adhering oil droplets. Next add a drop of water and mix again and cover the water mount with a cover glass. Examine with a microscope of at least 100x magnification. If a drop of red ink is added to each water mount the pollen grain details will be greatly enhanced.

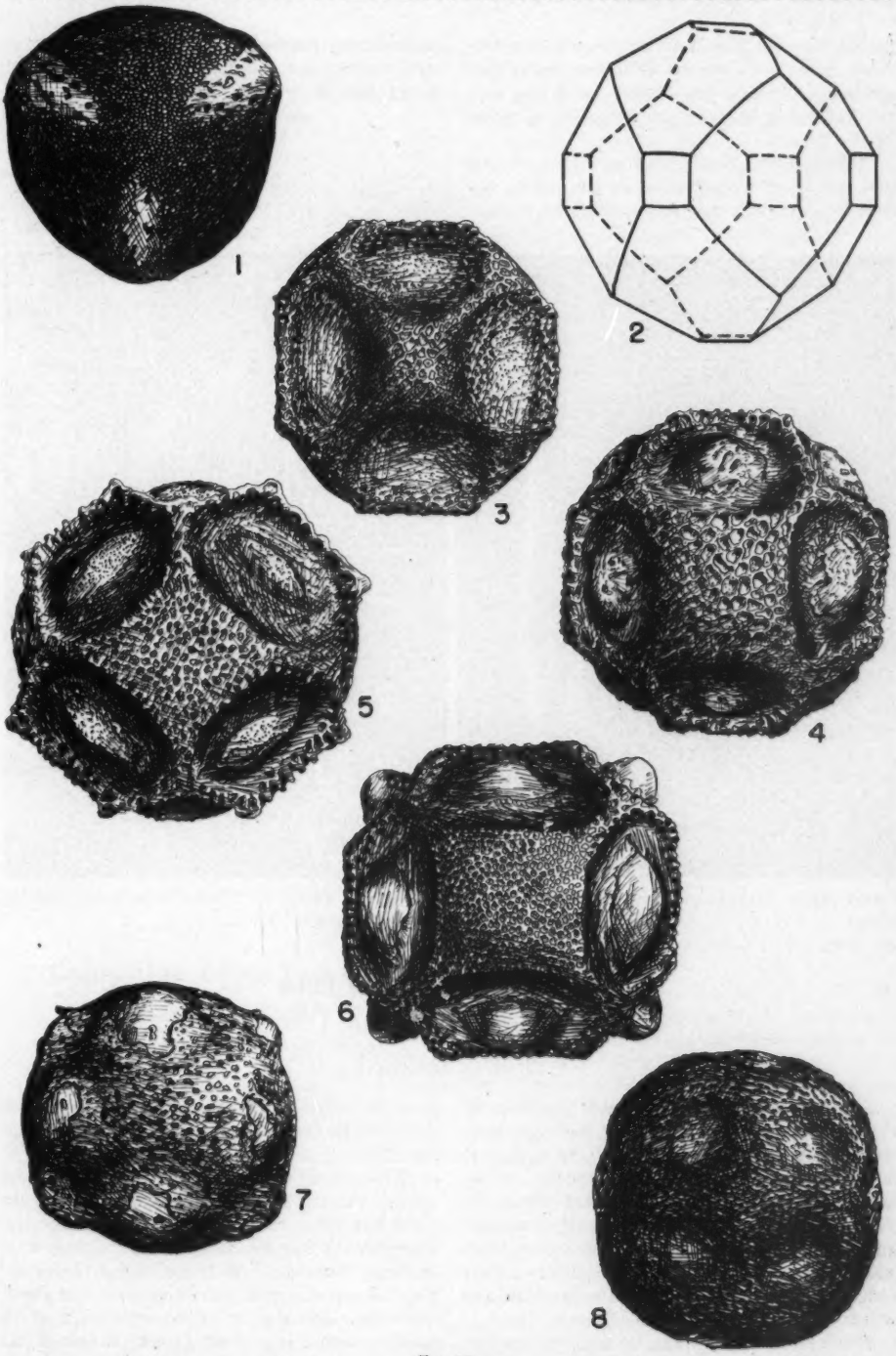


FIG. 27

FIG. 1. Pollen grain of *Carnegiea gigantea.* FIG. 2. Cube and dodecahedron typical of *Opuntia* pollen. FIG. 3. Pollen grain of *Opuntia macrocentra.* FIG. 4. Pollen grain of *Opuntia basilaris.* FIG. 5. Pollen grain of *Opuntia ursina.* FIG. 6. Pollen grain of *Opuntia fragilis.* FIG. 7. Pollen grain of *Opuntia acanthocarpa.* FIG. 8. Pollen grain of *Opuntia fulgida* var. *mammillata.*

grains, size of germinal furrows, etc. In fact, these differences are so consistent with each species of *Opuntia* that pollen grains may actually be used as an aid in identification of an unknown plant.

Although this discussion has been quite general and brief[2], I am sure that the reader will now have a much greater appreciation of cacti, and more specifically, far greater knowledge and respect for the yellow dust found in all cactus flowers.

[2] For a complete discussion of cactus pollen consult: Kurtz, E. B. Jr., Pollen Grain Characters of Certain Cactaceae, *Bulletin* of the Torrey Botanical Club, Vol. 75, pp. 516-522, September, 1948.

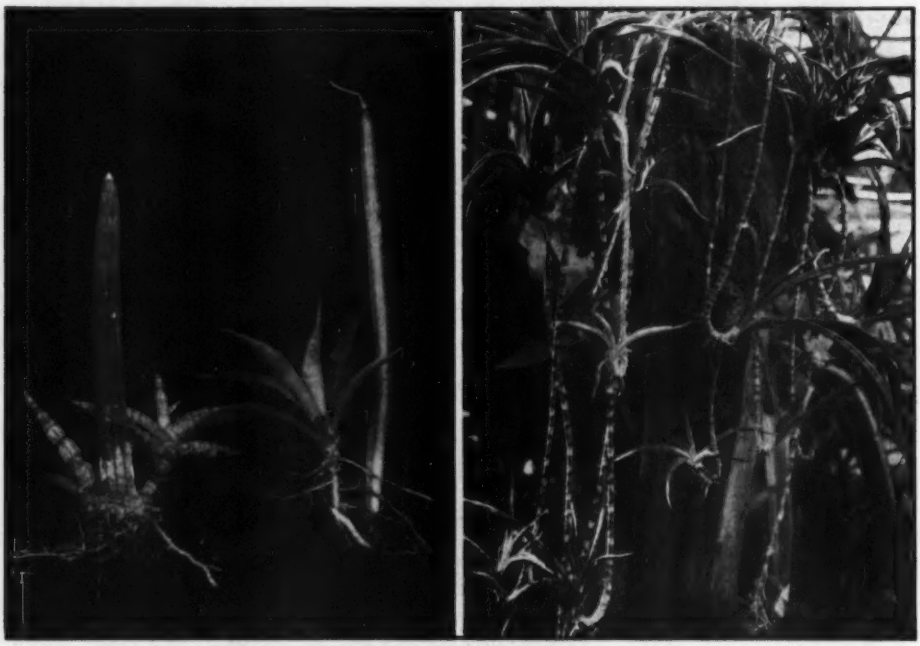


FIG. 28. LEFT: Propagations from Sansevieria leaves; courtesy John Poindexter. RIGHT: Interesting hanging basket in nursery of Charles Cass. Haselton photos.

THE GENUS SANSEVIERIA

Family Liliaceae

By H. C. SHETRONE

In view of the many desirable qualities of the Sansevierias, it is surprising that they have been accorded so little attention by collectors and fanciers. While not so definitely "succulent" as some others from the arid regions of the world, they are markedly drought-resistant, adaptable to a wide range of temperature, light and moisture conditions, and in addition to their individual attractiveness, they are invaluable as accent and contrast plants.

Aside from the familiar "snake plant" (*Sanseveria trifasciata* and its varieties) most collectors are unfamiliar with the diversity of material in the genus, perhaps because commercial growers seldom list them, and from the further fact that the literature is scant and mostly unavailable.

While occasional references to Sansevierias appear in early botanical literature, it was not until 1915 that a monograph of known species, compiled by N. E. Brown, was published in Bulletin Number 5 of Miscellaneous Information, Royal Botanic Gardens, Kew, England. This study describes and illustrates a total of 58 species, with a key to the genus. A few of the better known of these, together with some interesting horticultural varieties, as the popular *S. Hahnii,* are being cultivated in commercial

greenhouses. The writer has seen and admired the collections at Kew Gardens, and the Shaw Gardens in St. Louis. He has in his private collection some 10 or 12 species.

The Sansevierias range in size from quite small to fairly large plants. A few, as *S. arborescens,* are definitely "stemmed," but for the most part they are either stemless or very short stemmed. Leaf forms range from the lanceolate ones of *S. trifasciata,* through intermediate types to the cylindrical leaves of *S. cylindrica.* This last-named, with a few others, are two-ranked, and are most intriguing in appearance. Transverse shadings of gray and green; longitudinal "stripes" of cream and yellow; and margins of white or pink, add to the attractiveness of the foliage.

Inflorescence of the Sansevierias is borne on a long stem or pedicel either as a raceme or panicle; that is, unbranched or branched. Individual florets are white, at times tinged with green or pink. The recurved petals and extruded pistil and stamens, suggest certain of the cultivated garden lilies, of the same grand family. While flowers of the Sansevierias, as such, are short-lived, the flower stalks and unopened buds, often suffused with translucent pink, are most attractive over a considerable period of time.

Some of the Sansevierias which should be available to collectors are *S. pumila, suffruticosa, arborescens, subspicata, Ehrenbergi, trifasciata, cylindrica, thyrsiflora, parva* and *Aethiopica.* Most of these are free bloomers if kept pot-bound. They are native mostly to tropical Africa and adjacent islands, with a few occurring in Arabia, Ceylon, India and Burma.

Cape Aloes—Primitive South African Industry

From Johannesburg *Sunday Times*

Have you ever seen "Cape aloes" mentioned in books dealing with the resources of South Africa, or possibly in export returns? If you have, you no doubt wondered what product this is, who produces it, and what process is necessary for making it available for export.

Such information is not readily forthcoming, however. The production of Cape aloes in South Africa is typical of those primitive industries which are to be found in every country.

In spite of modern methods and machinery it is found that virtually the same technique is employed to-day as in past centuries, similar to the shellac industry in India and in the collection and treatment of the many lesser-known materials of commerce obtained from the vegetable and animal kingdoms.

Cape aloes is the name given to the extract from a species of aloes which grows profusely in various parts of the Cape Province. The plant grows to a height of about five feet. The lower portion of the stem is bare, the thick fleshy leaves are supported at the top, and in the centre is a cluster of reddish flowers.

The juice in the leaves contains an extract which has valuable medicinal properties, a fact which has long been known to the natives of South Africa.

The active extract in the aloe juice is known as Aloin, and is a powerful purgative.

The collection of the aloe juice in the Cape appears to be traditionally an occupation for certain groups of colored people, and is carried out in the area surrounding Port Elizabeth and in the South-Western Cape districts around Oudtshoorn and Mossel Bay.

The yield of juice is very low in dry seasons but good rains help to increase it. The collectors cut off leaves from the aloes and arrange them so that the cut ends drain into a receptacle —often an old skin.

After some time the liquid, which has drained out, is removed from each heap and transferred to a 44-gallon drum. This is placed over a fire and the liquid is evaporated to a fraction of its original bulk. It then has the appearance of a dark, thick syrup. On cooling it solidifies into a hard crystalline solid with the appearance of dark rosin. The extract is then brought to the towns and sold to firms which export it.

Aloe extract is often used in patent medicines, some of which have a world-wide reputation, and is also administered to domestic animals.

Only a few countries produce it, the other main source of supply being the Barbados Islands, where the extract has been regarded for years as superior to the Cape product. This is attributed to the primitive methods of preparing Cape aloes, and there is no doubt that the boiling-down of the juice over an open fire leads to a certain amount of deterioration.

No attempt seems to have been made to put the production of aloe extract on a scientific basis. Perhaps the relatively small world demand accounts for this.

So in the meantime the extraction of aloe juice remains one of a number of precarious occuptions in South Africa, like the collection of prickly pears, which help the poorest sections of the population to eke out a few shillings when seasonal and other circumstances are favourable.

ARIZONA CACTI

No. 2 of a series by R. C. PROCTOR, Phoenix, Arizona.

FIG. 29. *Echinocereus triglochidatus* Engelmann, is commonly called Claret Cup because of its brilliant scarlet, cup-shaped flowers. The type locality is New Mexico but Mr. Proctor reports its occurrence in western Arizona, but none in the southern part.

The Proctors are doing more to publicize cacti than all other agencies combined (see May-June Journal), The February *Catholic Digest* contained a condensed article of Mrs. Proctor's titled "Cacti Giant." Proctor's pictures appeared in Richfield's *Wild Flowers of the West*. Watch the *Chicago Tribune* and the *Nation's Heritage*.

NEW SPECIES FROM PERU

By JOHN AKERS

Peruvocereus chrysacanthus sp. nov.

Plants columnar, branching from the base to form groups of from 5 to 25 stems. Stems usually less than 1 meter in height, composed of from 17 to 18 low ribs; stems actually only 7.5 cm. in diameter although they appear to be 10 cm. due to the dense growth of slender spines which nearly hides the yellow-green epidermis; spine cushions approximate (1 cm. distant), non-conspicuous, felted, nearly round (5 mm. long, 5 mm. broad and 2-5 mm. high); areoles filled with short, whitish, kinky, silky hairs; more than 65 pure golden-yellow, hardly pungent, flexible, acicular spines at each areole; spines unequal, 7 to 12 mm. long; central spines 2 to 3, ascending and depressed, acicular, pungent, 4 to 4½ cm. long, horn-yellow mottled with brown; bristles about 15, yellowish-white, 15 to 17 mm. long and emanating from the lower one-fourth of the spine cushion; flowers solitary, appearing from near the top of the branches, funnelform with a rotate, expanded limb about 5 cm. broad; inner perianth-segments about 20, greenish-white with a darker green, central stripe, apiculate, narrowly to broadly spatulate, with or without lacerated edges; outer segments about 20, more narrow and nearly linear, apiculate, much reflexed, green, shaded mauve to reddish brown in color; tube thick and heavy, 2 cm. in diameter by 5 to 6 cm. long, covered with many long, narrow, greatly raised, greenish scales (in some cases the scales are broader); scales apiculate, tinted mauve at the tip and with about 20 whitish to brownish hairs emanating from their axils; hairs up to 1 cm. long but usually from 3 to 4 mm. in length and but little conspicuous; ovary light green, scaly and hairy; stamens included; filaments many, thread-like, greenish, attached in a spiral arrangement, the upper ones attached to the base of the petals; anthers ivory-colored, oblong, small (1 mm.); style included, usually much shorter than the stamens, flattened, and greenish; stigma-lobes 12 to 13, 8 mm. long, yellow-green, velvety; ovules many, translucent, white, very small; fruit greenish to reddish green, ellipsoidal, 3 cm. by 4 cm., with small, apiculate, distant scales; flower remains persistent, brownish, with gray hairs; seeds small, black, punctate with a dirty gray hilum; roots coarse and woody with loose, scaly bark.

FIG. 30
Peruvocereus chrysacanthus sp. nov.

Type locality: Kilometer 226 on the Pan American Highway north of Lima.

Distribution: Also found on the road to Sayan and may occur between these two localities.

Peruvocereus chrysacanthus, sp. nov.

Plantae columnares ad usque 1 m. altae ramos 5-25 aggregatos erectos vel adscendentes diametro 7-7.5 cm. ex basi emittentes; costae 17-18 humiles; areolae 5 mm. longae 5 mm. latae 2-5 mm. altae tomentosae pilis brevibus albido-bombycinis crispisque atque spinis circa 65 inaequalibus 7-12 mm. longis acicularibus flexuosis instructae, spinis centralibus 2-3 item acicularibus pungentibus 4-4.5 cm. longis, flavidibus brunneo-maculatisque, setis ca. 15 flavido-albis 15-17 mm. longis; flores infundibuliformes limbo 5 cm. lato segmentibus interioribus corollae circa 20 virido-albis medio viridostriatis apiculatis anguste vel late spathulatis margine integris vel laceratis, segmentibus exterioribus anguste spathulatis vel linearibus item apiculatis reflexis viridibus purpureo suffusis, tubo corollae diametro 2 cm. 5-6 cm. longo, squamato; tubi squamae apiculatae virides in axillis pilos 20 albos vel brunneos 3-10 mm. longos gerentes; stamina inclusa viridescentia, antheris eboreis; stylus inclusus, stigmatium lobis 12-13 flavido-viridibus ca. 8 mm. longis; fructus viridis vel rubro-viridis squamatus 3 cm. latus 4 cm. longus; semina parva nigra punctata; radices lignei cortico squamato.

FIG. 31
Peruvocereus chrysacanthus sp. nov.

This *Peruvocereus* is the most attractive of all the yellow spined species, and is one of the six most attractive of the entire genus. Small plants or old mature specimens are a mass of deep golden, acicular spines. Like all Peruvian Cerei, the lower spines turn black with age which must be the result of their dry environment, since specimen plants in the garden retain their color. The species is readily distinguished from the others because of the profuse growth of spines. While the actual diameter of the stems is not so great, the thick coating of spines makes it appear much greater. The flowers open late in the afternoon and close by 9:30 the next morning. This species, naturally found in a very dry habitat, enjoys plenty of water in cultivation during the growing season which improves its beautiful coloring. *Peruvocereus chrysacanthus* is a sparse bloomer, but as the flowers are white and not particularly exciting, this does not detract from the value of the species. Many scorpions live among the dry or decaying roots, and the collector must be vigilant to avoid contact with these pests. Harmless lizards and an occasional desert fox also inhabit the barren wastes where this species is found. Birds and rodents are non-existant. Before the Pan American Highway was paved north of Lima, travel was mainly by boat and the desert areas between the river valleys were not explored.

We are indebted to Dr. Ira L. Wiggins of Stanford University for the Latin diagnosis.

NEW RETAIL CATALOG

"1949 Treasure Trove from Cactus Land" is the brand new 36 page catalog just issued by Johnson Cactus Gardens, Paramount, California. There are 200 photos of plants and another 72 in color. This is one of the finest catalogs yet issued by Harry Johnson and we advise you to send your 25c now for a copy. Please mention your JOURNAL. The following letter is from one of his 100,000 customers who has found great enjoyment from plants obtained from his nursery.

FROM FAIRPORT, NEW YORK

Johnson Cactus Gardens:

I have an Easter Cactus plant which I bought from you quite a few years ago. It has blossomed every year with an increasing number of flowers. In 1947 it had 117 and was in bloom for ten weeks—a marvelous sight. Last year it had only 75 flowers because a branch dropped off. I have two Thanksgiving Cactus plants, also purchased from you. This year they not only blossomed at Thanksgiving time as usual, but now one is flowering for the second time (Feb.). My two Christmas Cactus plants I inherited from my grandmother; the larger one I should judge must be about 75 years old and both of them were covered with blossoms at Christmas and are now just dropping their flowers. The only reason I don't like your catalog is that I always want everything in it and my space is limited! R. E. L.

The following four pages are the 8th installment of the Blühende Kakteen reprint.

Echinocereus Scheeri Lem.

Plate 14

From Blühende Kakteen—July 30, 1901.

Echinocereus leptacanthus K. Sch.

PLATE 15

Echinocereus leptacanthus K. Schumann, "Gesamtbeschreibung," 260.

Cereus pentalophus P. DC., "Revue des Cactées," 177; var. *subarticulatus* Coulter, loc. cit.; var. *leptacanthus* Salm-Dyck, "Cact. hort. Dyck." (1850), 42.

The correct name for this plant is rather uncertain. It first appeared in the literature as *Cereus pentalophus* P. DC., var. *articulatus*. Later, Prince Salm-Dyck altered the name to *C. pentalophus* var. *leptacanthus*. One can easily suppose, after reading the description, that the type of *C. pentalophus* is identical with *C. procumbens* Eng. The most important character in which the variety differs from the type is that it lacks the central spine, and this circumstance convinces me that my interpretation is correct. However, if one would agree with this, then considerable nomenclature changes would be the next consequence. I am of the opinion that this would be a futile step in dealing with two such distinct species as *Echinocereus procumbens* Eng. and *E. leptacanthus* K. Sch., and I think the subject should be ended with this discussion.

The plant is not very widely distributed in collections, but because of its free growth and beautiful blossoms it deserves greater popularity than do many other of the species. The striking contrast between the white throat and carmine-violet tips of the petals gives the flower a definite charm and therefore provides a showy potted plant; the flowers offer a delightful appearance as they develop for a long time and on all branches.

As already mentioned above, *E. leptacanthus* K. Sch. is related to *E. procumbens* Eng.; it is occasionally confused with it, although *E. procumbens* Eng. is sufficiently distinct through the different appearance of the ribs and the darker green color. Especially noteworthy, however, is the fact that *E. procumbens* Eng. is normally provided with a long central spine which is lacking in *E. leptacanthus* K. Sch. While not all areoles of *E. procumbens* Eng. carry these central spines, one is sure to find them fairly numerous on well-cultivated specimens. The specific name of *E. leptacanthus* K. Sch. (meaning "lightly-spined") is justified in so far as the spines are generally somewhat weaker than in its sister species.

The habitat of this plant is inadequately known other than that it came to us from Mexico. It originated from the great expedition of Coulter which was inspired by the elder De Candolle; the latter, at the time was, writing that extraordinarily comprehensive work "Revue des Cactées." Concerning the exploration of Coulter we are insufficiently informed, although it is known that in 1834 he visited Ehrenburg in Real del Monte. Perhaps it originated in the Mexican highlands where many other species of this genus exist. As the importers have not been bringing to us the less conspicuous plants, the importations of the last year have provided us with no particulars as to this habitat.

Translation by Myron Kinnach

CLASSIFICATION—1949

Notes by W. TAYLOR MARSHALL

Echinocereus pentalophus (De Candolle) Rümpler.

This is one of the many variations to be expected in a species of wide range. Central spines are occasionally wanting throughout the range.

Echinocereus leptacanthus K. Sch.

Plate 15

From Blühende Kakteen—July 30, 1901.

Echinopsis rhodacantha Salm-Dyck

Plate 16

Echinopsis rhodacantha Salm-Dyck, Cact. hort. Dyck. (1850), 39 and 182; K. Schumann, Gesamtbeschreibung, 239.

Echinocactus rhodacanthus Salm-Dyck, hort. Dyck., 341 (1834).

Echinocactus coccineus Otto in Pfeiffer, Enumer. Cact., 50.

Cleistocactus rhodacanthus Lemaire, Illustr. hort. VIII. Miscell., 35.

Cereus rhodacanthus Weber mss. in K. Schumann, Gesamtbeschreibung, 240.

Two years ago, when I first saw this plant blooming in the collection of Herr Graessner (Chief Inspector of Garrison Administration) at Perleberg, I immediately resolved to have it illustrated. Although I had already become acquainted with a description of the flower, I was greatly surprised at its actual shape and color. It has such peculiar properties that one can well understand why Lemaire would separate it from the genus *Echinopsis*. But I certainly cannot quite approve of his action in placing it in his own genus, *Cleistocactus*. He has here placed it together with *Cereus Baumannii* Lem. with which it has absolutely nothing in common, either in the shape of the plant or in the nature of the flower. The Greek word "kleistos" means "closed." By using this name, Lemaire was referring to the flower, which does not open widely as in other cacti, but which is closed at the tip. A very striking character lies in the much exserted stamens, which are met with in only a few cactus flowers (for example, the genus *Nopalea* which Prince Salm-Dyck separated from *Opuntia* solely because of this characteristic).

Examination of the flower gave several deviations from the description of it which we possess. Some of these are doubtless due to individual variations which, in cacti, fluctuate over rather wide extremes, as is well known; others, however, are corrections of obvious errors. For this reason I will repeat once again the description of the flower:

The one to several spindle-shaped flowers appear in the immediate area of the crown, their total length being 7 cm. The ovary is covered with fleshy, closely set, lanceolate, reddish-green scales from the axils of which project white woolly hairs. The tube of the perianth is 4 cm. long, so that the free petals reach a length of scarcely 1 cm.; the largest diameter of the tube, which grows erect, is 1.5-2 cm.; it is covered with lanceolate, tapered, light carmine-red scales. The petals are of a vivid carmine-red, the outer resembling the scales, though somewhat longer, the inner spathulate and slightly toothed. They rest tightly against the stamens so as to completely close the throat of the tube. The numerous stamens extend 1 cm. beyond the end of the flower; the carmine-red filaments have dark brown anthers, the latter being scarcely 1 mm. long. The carmine-red pistil is about as long as the stamens; the 8 stigmas, according to my observations, form a clavate body by means of their being closed together; later they probably radiate separately.

As with so many of the early described cacti, we are likewise inadequately informed as to the habitat of this interesting species. Prince Salm-Dyck declared Brazil to be its homeland; this statement was founded on an error; Pfeiffer came nearer to the truth when he named Mendoza (in Argentina), not far from the Cordilleras, as the source of the species. The area about this city certainly became more distinguished for the abundance of species than any of the localities in the western states of Argentina from which cacti were brought to us. However, the environs of this city have been conceived as covering such a vast area that one cannot really refer the place of origin to the city itself. For many decades the plant was not imported again, so that only a few specimens of the greatest rarity existed in German collections. Recently, however, it has again been brought to us. For the introduction of this plant, as well as for that of many other valuables, we are obliged to Mr. de Laet of Contich who is at present striving with insufficiently rewarded diligence and unselfishness to collect again in Europe the greatest rarities. From him we learn that the plant is an inhabitant of the state of Tucuman, into which extend the snow-clad mountains of the Cordilleras.

Translation by Myron Kinnach

CLASSIFICATION—1949

Notes by W. TAYLOR MARSHALL

Denmoza rhodacantha (Salm-Dyck) Britton and Rose.

The closed flower resembles *Cleistocactus* but in this species there is a mass of white wool near the base of the tube on the inside. For this reason Britton and Rose placed it in a separate genus, *Denmoza,* an anagram of Mendoza from which province in Argentina their specimen was sent.

A NATURALIST'S DIARY ON THE MEXICAN WEST COAST

By E. YALE DAWSON

PART IV

Sunday, December 1—Quelite, Sinaloa

Driving conditions have become retrograde as the roads from Culiacan south to this point have degenerated to wagon tracks. North of Culiacan we found little of an exciting nature along the coastal road. For two days we drove monotonously through flat country crowded with high, mesquite-like brush and mixed cacti. The whole was drab and uniform. Every now and then we would pass a ranch or a tiny settlement, and then at each river there would be a small town with its inevitably wretched, dusty streets. Dust is everywhere in the towns, and when an ox cart rumbles along a street it is thrown into the air in great clouds. Yet, the streets are lined with food merchants and meat is hung on the walls of the little shanties to dry in the sun.

Southward from Culiacan the brush land has gradually turned into forest, and here and there are brilliant patches of color from the bignoniaceous trees which in total lack of leaves have gone all out for flower production. *Pereskiopsis* has come into the cactus flora again, and just a while ago some of the most interesting species to date appeared, the rare *Lemaireocereus Martinesi* and *Cephalocereus Purpusii*. Bromeliads are appearing in larger and more prominent forms; the low spots in the hills now hold standing water which puts our four-wheel drive in operation; long-wing butterflies are present in the thickets, and with papayas and sugar-cane becoming dominant crops in the villages, we feel ourselves moving into the atmosphere of a tropical land.

Sunday, December 15—
Santiago Ixquintla, Nayarit

Christmas is almost here, but the congestion of gift-shopping, the bright lights and the decorated trees seem far away as we cut our ways through thick tropical forests in search of orchids and the big tree iguanas. Today we hiked up into the hills and penetrated a little way into a dense jungle which had been visible from the coastal road below. We tried out our shiny new machetes in hacking through the outlying brush and then through the vine-entangled ravines under the trees. The canopy of foliage above us was filled with chattering parrots, and the shadows of the trees with the ghostly flutter of the transparent-winged butterflies.

At Acaponeta we entered the wonderful palm groves which are so striking a feature of the coastal plain of northern Nayarit, and here we found orchids, bromeliads and hylocerei growing on the palms. Quantities of tropical insects are being taken for our collections. The cacti have now become almost exclusively the clambering or vining types such as *Selenicereus* and *Hylocereus*. The lizards which in Baja California could be pickled at the rate of about twenty to the pint, now occupy many times that space,

FIG. 32
Cephalocereus Purpusii near Quelite, Sinaloa.

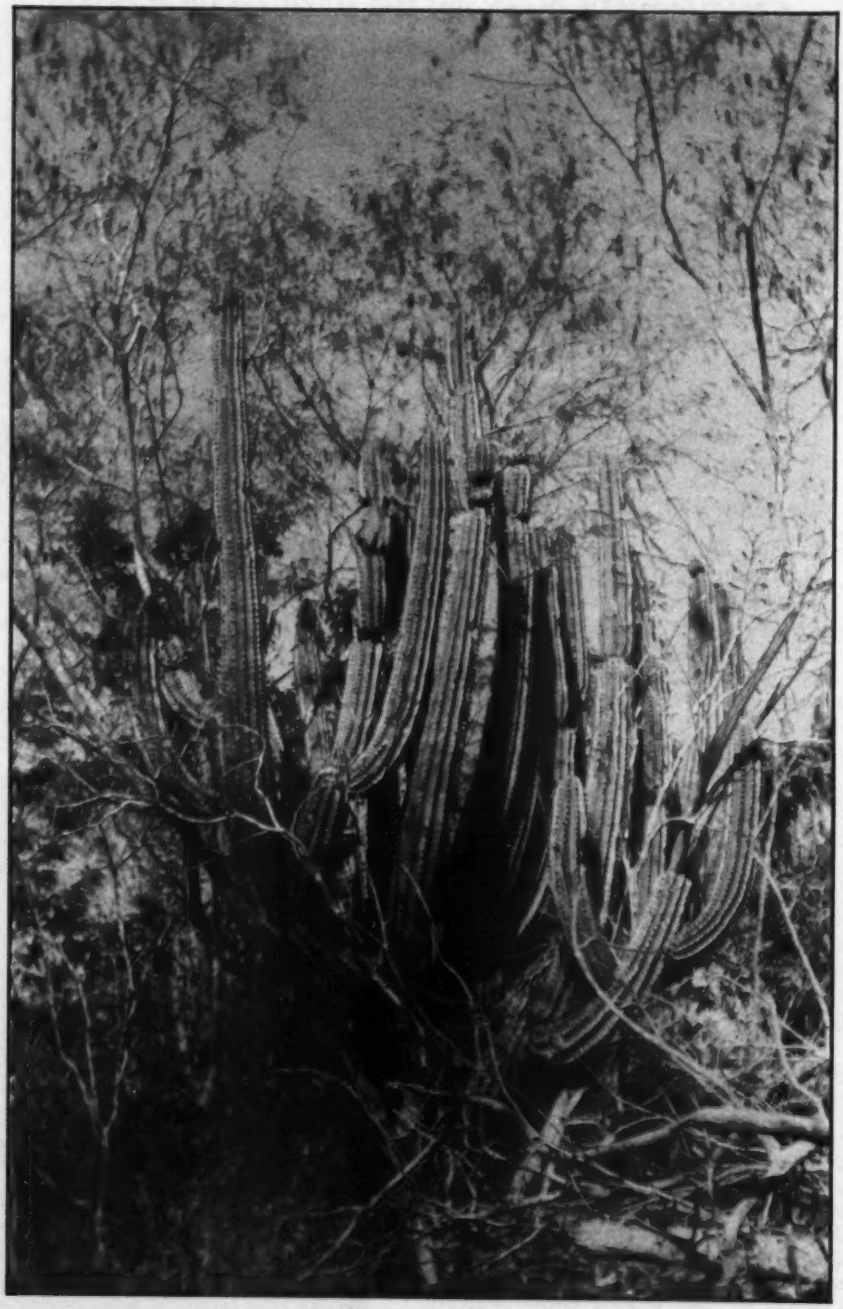


FIG. 33

Lemaireocereus Martinezi near Quelite, Sinaloa.

and my first five-gallon tin of lizards is now brim-full.

The roads here are wretched, mainly on account of heavy construction, for it appears that a great effort is being made to put through an all-weather road between Tepic and Mazatlan. Thousands of men are on the job from Rosario to Tuxpan and it would seem that all the heavy equipment in Mexico has been concentrated here.

Friday, December 20—Jalcocotan, Nayarit

Of all the places I have yet visited in Mexico none can compare with Tepic in opportunity for the naturalist. First of all, Tepic is a comfortable, clean, relatively modern little city on the main rail-line from the United States. The climate is delightful because of the elevation, and the conditions for good health are excellent compared to the steaming, malaria-infested areas at sea level. Tepic lies in a little valley amid grassy knolls and forested hills. On the south, the spectacular old volcanic cone of Sanguanguay provides a picturesque setting. We have spent a week in the area now and have not begun to touch the possibilities for biological collecting. The country abounds with an endless variety of vegetation,—oak forests, grass-lands, pine forests, open volcanic slopes, deep, dark forest canyons and chaparral. The Rio Grande de Santiago flows a few miles away, the longest river in Mexico, winding through a magnificent tropical land. To the west the mountains rise several thousand feet, and on the other side,—that is where we are today. What a naturalist's paradise!

Yesterday we drove up over the ridge and down the steep incline into the valley of Jalcocotan. Immediately we were in the densest of jungles. Jalcocotan is a village of banana groves in the midst of tropic beauty,—the dense forest full of flowers and brilliant butterflies, screaming with great green parrots, draped with miriads of climbing, vining, epiphytic and parasitic plants. Giant aroids choke the streams. Tall tree ferns dip their elegant fronds from the dark gorges amid towering trees draped with vines and *Monstera* climbers, their broad limbs loaded with massed orchids, bromeliads and ferns. The tree ferns were an amazing sight, for I believe tree ferns are not known to occur on the central coast of Pacific Mexico. Surely they are indicative of a rain-forest vegetation such as one would not have expected to see this side of the Guatemala frontier.

Down at Mira Mar this morning we met the tide on a genuinely tropical shore, and this afternoon turned to reptile hunting with special intent against the big tree iguanas. One of the villagers knew where to find them and took us off through the woods toward the giant fig trees at the edges of little streams. They were up in those trees, a hundred feet or more, magnificently camouflaged big orange, yellow and green ones four to five feet long. Quietly munching away at the leaves in the tree-tops they were easy targets once they could be spotted, but it took the 12 gauge shot-gun to bring them down. Three was all I could handle, for even after removing 15 pounds of entrails I could scarcely stuff two of the larger ones into a five-gallon tin.

FIG. 34
Cephalocereus colony on foothill lava flows of Volcan de Ceboruco.

Monday, December 23—Guadalajara, Jalisco

We came back into Tepic yesterday simply loaded down with specimens of every sort. It took us most of the night to take care of the insects, label the orchids, fill out the field book and get the truck repacked for the next lap of the journey. Although I've already shipped away several cases of specimens, the truck becomes more congested day by day.

It rained most of the day as we drove southward through the barranca country, but the fine, graded road made the trip very satisfactory indeed. A few years ago this "barranca" stretch was absolutely impassible by automobile, but now it is one of the best sections of the west coast road. The weather cleared as we approached Volcan de Ceboruco and we came in

for some thrills, for the vegetation of the lava flow is totally different from that of the surrounding country and is dominated by cacti and other succulent plants. Most striking were the colonies of *Cephalocereus* which, with their gleaming white hair, stood out elegantly against the dark lava. Rising up amid the stunted *Bursera* trees *Lemaireocereus montanus* turned up unexpectedly and suggests that the species may have a continuous range at medium elevations along the Sierra Madre all the way from the type locality at Alamos, Sonora far to the north. Growing in clefts in the sterile lava (which is only 80 years old) we found two kinds of orchids growing in large masses. One is a huge thing (*Cyrtopodium*) with pseudobulbs as much as 24 inches high.

We had seen only what grows by the side of the road. The lava stretches out for miles, extending far to the east to the cone of the volcano with its shoulders alive with steaming, smoking vents. Here is another intriguing place to which we must return. Surely the botany of this recent igneous region has scarcely been touched.

In the rain the road over the barrancas is beautiful: wonderful hills covered with mixed cactus and woodland, plantations of agaves,—and the air so clean and palatable. At Tequila we came to the asphalt, the first real stretch of hard surfaced road since we left Ensenada 3000 miles behind us.

To be continued

WANTED

Will one of our members write an article on heating small greenhouses with natural gas? Suggestions wanted for Garden Club exhibits.

NEALE'S PHOTOGRAPHIC REFERENCE PLATES

Commencing January, 1949, we began issuing on annual subscription, forty-eight Reference Plates each year, showing various Cacti and other Succulents. Subscribers will receive four of these each month. All the photographs are new, have not been published and will be issued on art paper, printed one side only, in black. Some subjects which lend themselves most suitably, will be reproduced in color. Neale's Photographic Reference Plates are numbered in accordance with our numbering system in 'Cacti and other Succulents' (Copyright 1935) plus the additional numbers which will appear in the revised edition of Cacti and other Succulents' to be published by us when ready. They should be kept in numerical order, in a Loose Leaf Binder we are having specially made to take 2-3 years issues, which can be supplied if desired. Subscribers who join during any year, will automatically receive the back issues from the January of the current year. Particular care is being taken to photograph plants of perfect growth which faithfully represent the true species, and in such a way as to aid identification. The personal note gives that added unique feature in which we specialize:—our own knowledge and growing experience with the living plants. Annual subscription $6.50.

W. T. Neale & Co., Ltd., Franklin Road, Worthing, Sussex, or Scott Haselton, Box 101, Pasadena, California.

DESERT OBSERVATIONS

By SCOTT E. HASELTON

In a recent lecture by Dr. Fritz W. Went of California Institute of Technology, many interesting points were discussed. He describes the desert as a fine laboratory for observation. The vegetation is directly related to the amount of moisture and temperature. Seeds only germinate when there are sufficient rains to carry the wild flowers through to maturity. Cactus seeds also must have an uncanny way of delayed germination, "knowing" when they have a chance to produce growth that will carry them through until the next rains. The moisture storing capacity of cacti is well known because of the close-to-the-surface root systems which allow them to take in water rapidly by means of quickly produced hair roots. The Ocotillo is a good example of rapid growth of leaves after a rain; the leaves are then dropped as it becomes dry again.

Dr. Went discussed the Mesquite shrubs that form thickets where the water table can be reached by their roots which have been observed to go down 80 feet to reach water. The Palo Verde and the Smoke Trees inhabit washes while Cottonwoods thrive on a 10 ft. water table. Palms are dependent on a close-to-the-surface water supply. Cacti have best adapted themselves to the more arid areas. The corky root systems prevent the loss of moisture and their defense mechanism is such that a substance is secreted to repel other roots; thus cacti are sparcely spaced so that too many plants will not have to compete for the limited amount of moisture whenever it becomes available.

Growers of *desert* cacti may apply these observations to the culture of their plants. Thorough watering should be alternated with relatively dry periods rather than keep the soil too moist over long periods of time. Rest periods would correspond to the dry months. A knowledge of the rainy seasons of the habitats of different cacti should be part of the knowledge of all growers.

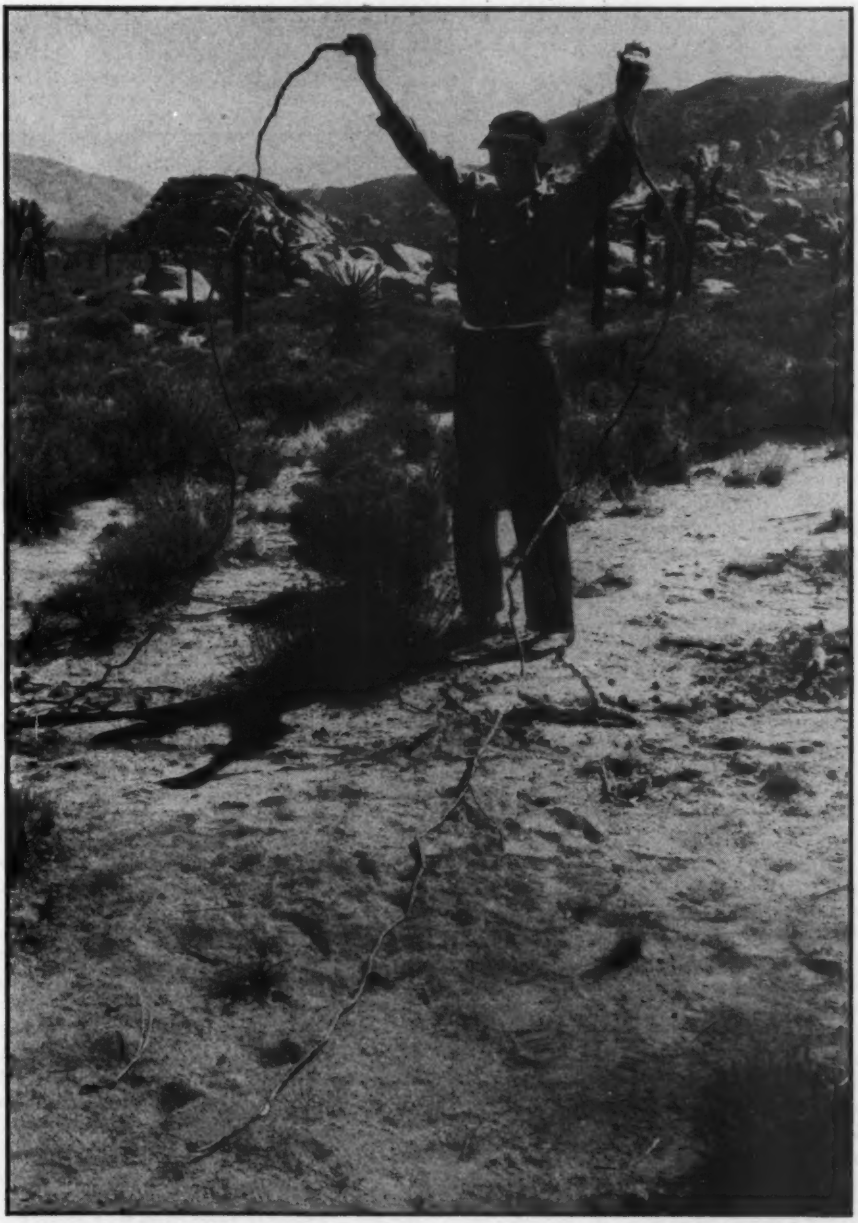


FIG. 35. Mr. Claude Allen shows the length of the corky roots of *Opuntia echinocarpa*. A small plant less than two feet tall (shown near his left foot) and 1½ inches in diameter, had been chopped off by a vandal at the entrance to Hidden Valley in the Joshua National Monument. One of the roots was over 35 feet long and was no deeper than three inches. The root covered an eight foot area around the plant. Haselton photo.

PHYLLOCACTUS GAERTNERI K. Sch.

By KARL SCHUMANN

From "Kakteenkunde," Volume 4, No. 7, July, 1894

(*Schlumbergera Gaertneri*)

Even though this plant is by no means an unknown novelty to the professional gardener or the cactus collector, we believe it deserves a still wider acquaintance and distribution because of several excellent qualities. It is fairly hardy and succeeds under less favorable conditions, bringing a much desired variation to collections. It will reward one at the beginning of April for any trouble taken with an extraordinary abundance of beautifully colored flowers. Moreover we would like to take this opportunity to discuss this plant, usually assigned to the genus *Epiphyllum,* whether it be called *E. Gaertneri* or *E. Russellianum* Hook. var. *Gaertneri* Regel, to give it its appropriate classification in the system, and to note the differences between the genera *Epiphyllum* and *Phyllocactus.*

Phyllocactus Gaertneri is an upright epiphytic, tree abiding, much branched, jointed half-shrub, whose young stems have a Cereus-like appearance in the manner of many *Rhipsalidae.* These are 1 to 2 cm. long, 5 to 10 mm. thick and display either straight or slightly spiraled, somewhat sharp angles, from whose areoles 6 to 20 weak, 3 to 4 mm. long, widely diverging bristles appear. The joints produced later are nearly without exception leaf-like, 1.5 to 4.5 cm. long and 1.3 to 2 cm. broad, lineal-oblong to somewhat inversely ovoid, rounded or truncate at the top and base, and crenate on the edges; the bristles appearing from the areoles are here less numerous, but often form an upright tuft at the top of the joint.

The flowers appear singly or in twos at the end of the branch; they arise from the leaf-like joint and are perpendicular to the longitudinal axis of the last joint. Because they usually hang down in an elegant arc, the horizontal opening of the flower is turned toward the ground; they are sessile and regular. The winged 5-angled ovary is inverted-pyramidal and green or tarnished brown colored; it has no scales. The lower, somewhat fleshy petals are short triangular; they merge from short lanceolate to long lineal-lanceolate, and are long acuminate. The color of the flower is a beautiful cinnabar red with a tinge of scarlet. The stamens are much shorter than the petals, the small anthers are yellow. The style overtops the stamens and runs out into 5 to 7 fairly long recurved stigma-lobes. We have not seen the fruit or seeds.

FIG. 36. This picture of *Schlumbergera Gaertneri* conforms with illustration by Karl Schumann. Haselton photo in Coolidge Rare Plant Gardens.

The plant grows in the environment of the town of Joinville in the state of Santa Catharina in Southern Brazil and if we do not err, was first sent by Gaertner to Regel in St. Petersburg, who described it as a variety of *Epiphyllum Russellianum* Hook. We have had the opportunity of examining numerous examples of both living and dried material from there. The last mentioned species was discovered by Gardner about 1840, in the Organ Mountains near Rio de Janeiro, from where we have examined material in a dried condition through the kindness of Dr. H. Schenk of Bonn. Without a doubt it was formerly cultivated in England, an excellent illustration of a flowering example there appearing on plate 3717 of the Botanical Magazine. Although it is often offered in the catalogs, at present it does not seem to be true in the trade, at least we have not seen it anywhere.

Next the question arises, is *Epiphyllum Russellianum* Hook. actually specifically different from our plant? This question can only be answered in the affirmative. *E. Russelianum* differs in having shorter and thinner, less spiny

joints which are never tufted at the ends, and are of a more bright green color; the flowers are clear rose; and it is a rock plant of the high mountains which is seldom found below the timberline. *Phyllocactus Gaertneri* is a lowland plant characteristic of the densest virgin forests.

Let us now analyze the other question, why is the plant placed in the genus *Phyllocactus* and not in *Epiphyllum?* When we consider the beautiful *E. truncatum* as the type of the genus *Epiphyllum* as set up by Pfeiffer, we have before us a genus which is one of the best defined in the entire family. The most outstanding character lies in the pronounced zygomorphic form of the flower. However, next to this we find by cutting through the flower a second more important character. We see the stamens arranged in two groups; the outer are attached to the corolla tube, the inner form clusters arising from the receptacle where they are fastened together through a tubular connection; an inner deflexed toothed lobe hangs from the upper end of this tube.

In comparison, the genus *Phyllocactus* has a regular funnel-shaped flower corolla; the stamens are either not at all separated into two groups, or if they are, then the outer group is fastened to the under part of the corolla tube, the inner group to the throat of the tube. Never does it rise from the receptacle in a cluster, and thus logically the aforementioned lobe is not developed. Since *P. Gaertneri* is in all respects a true *Phyllocactus,* great importance cannot be placed upon the shape of the joints, as was without doubt previously done. The joints are similar in certain respects yet are not identical to those of *Epiphyllum.* Of special importance too, is the fact that Cereus-like joints are often observed in *Phyllocactus;* they are never found in the genus *Epiphyllum.* Hence it follows that *Epiphyllum Gaertneri* must be placed in the genus *Phyllocactus,* and *Epiphyllum Russellianum* be retained in the genus *Epiphyllum.* Both plants thus must be separated as different species as we have previously proposed in the "Flora Brasiliensis, Cactaceae" pages 217 and 218.

We are indebted to Mr. D. Holm of Riga for the illustration as well as for having suggested this article, and herewith render our profoundest thanks to him.

We also desire to include the following excerpt from the above gentleman's letter to us:

"Early in July, 1892, I grafted a small joint of *Phyllocactus Gaertneri* onto the stem of *Pereskia Bleo.* The middle of August this joint showed a small bud which grew into a joint during September. During the summer of 1893, this plant had grown to the size shown in the accompanying photograph. Early in March, 1894, exactly 1½ years after the graft was made, flower buds appeared, on some joints as many as four. From the beginning of April to the present day the plant has been covered with flowers. Every bud matured, which at first appeared, so that I counted 25 open flowers at one time. If we take into consideration, first: that each flower remained open for from six to seven days and increased in size during this time, second: that the beautiful scarlet red color of the buds and flowers was a delight to behold, and third: that these results were obtained in a relatively short time, I believe I am right in recommending the culture of the plant to all cactus lovers. In conclusion let me say that the depicted plant occupied the center of the stage in my window.

EDITOR'S NOTE: The former European system classified *Epiphyllum, Nopalxochia, Chiapasia,* etc., as *Phyllocactus, and Schlumbergera* and *Zygocactus* as *Epiphyllum.*

DISTRIBUTION OF MACHAEROCEREUS GUMMOSUS

Mr. H. Marks of Salinas, California, reports that he has found this plant growing on the Sonoran mainland of Mexico. This is an extension of the reported distribution of this species. Mr. Marks and Mr. Fritz Schwarz went ashore on the mainland across from the southeastern part of Giburon and found plants on a flat area. *M. gummosus* is on the island near the mainland but Mr. Marks reports that much of the vast coastal area has never been carefully searched by botanists.

FROM ENGLAND

Dear Editor:

After reading the "Editorial" in the Jan.-Feb. JOURNAL, just received, I feel that I would like to answer it. If the opinions of an ordinary Britisher with very ordinary education and position count for much, I think that the American JOURNAL stands alone in quality of production.

The many varied articles contain a vast amount of information which is presented in a clear and concise manner. To produce a magazine on such a vast and complex subject as cacti and succulents is no mean feat.

Any cactophile, whatever connection he or she has with a local group in the States, England, or other English speaking country, must realize that their own publications are to a large proportion *very local* in presentation and interest, which of course, is their primary need and object. However good these local publication are, they do not and cannot give the service which is given by the American JOURNAL.

Another good feature is your way of presenting advertisements. They are neat and correct in size for such a publication in which every word is read carefully. There is no need to take up half the space in displaying advertisements since the space can be used to a much better advantage and gives the reader much more for his money.

In conclusion may I add that any person who drops your JOURNAL simply because of joining a local group, is at a loss. Publications on our subject are too few and expensive and the American JOURNAL gives richly in return for the subscription price.

EDITOR'S NOTE: Such letters as the above and the many congratulatory notes on our combination of our bi-monthly JOURNAL are most encouraging. Thank you.

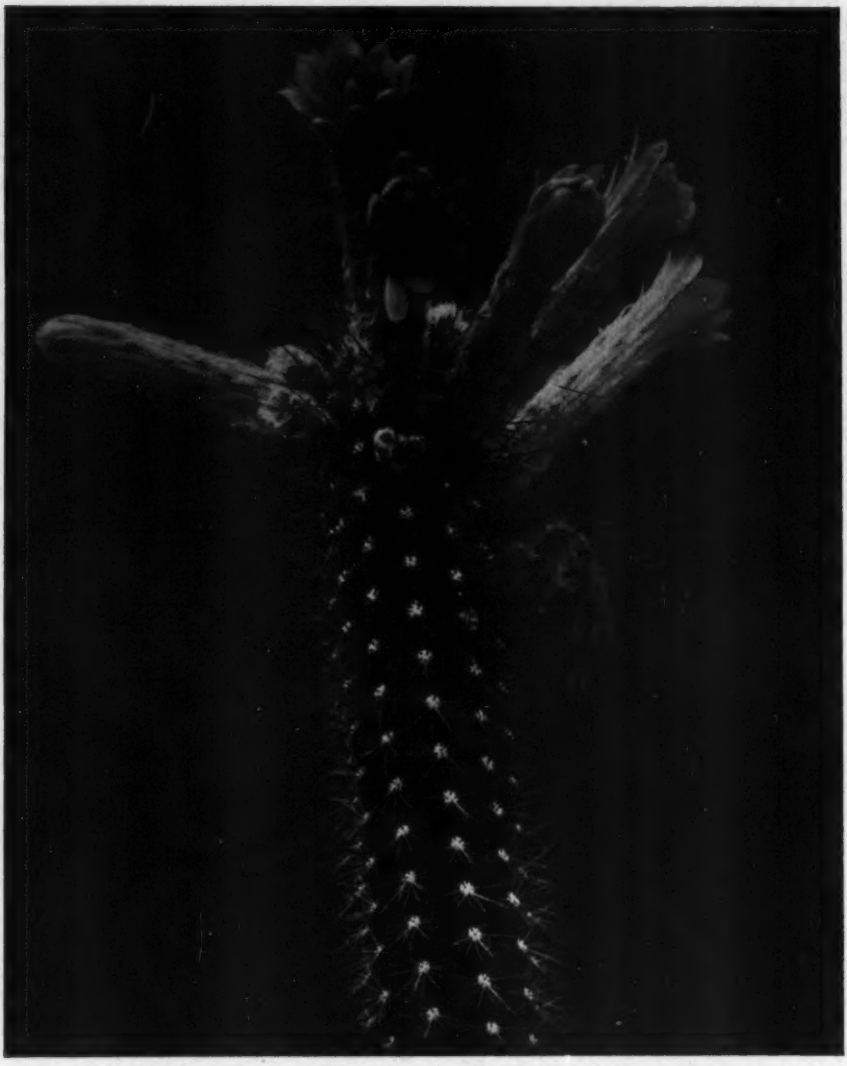


FIG. 37. *Borzicactus morleyanus* in flower, photographed by the author in his nursery at Carlsbad, California, August and September.

BORZICACTUS MORLEYANUS Br. & R.

By JOHN POINDEXTER

The writer recently had the good fortune to flower one of the rare members of the genus *Borzicactus*. This was a plant which originally came from the famous Wright garden in Santa Barbara, and was obtained under the name *Borzicactus fieldianus*. However, it shows more of the characteristics of *B. morleyanus*, so it is being described under that name.

The stem is more or less erect, showing signs of becoming decumbent with age, about fifteen inches tall, two inches in diameter, with eleven dark green ribs. There is a transverse groove, or sulcus above each areole. The areoles are round, white felted and lack hairs. There are about

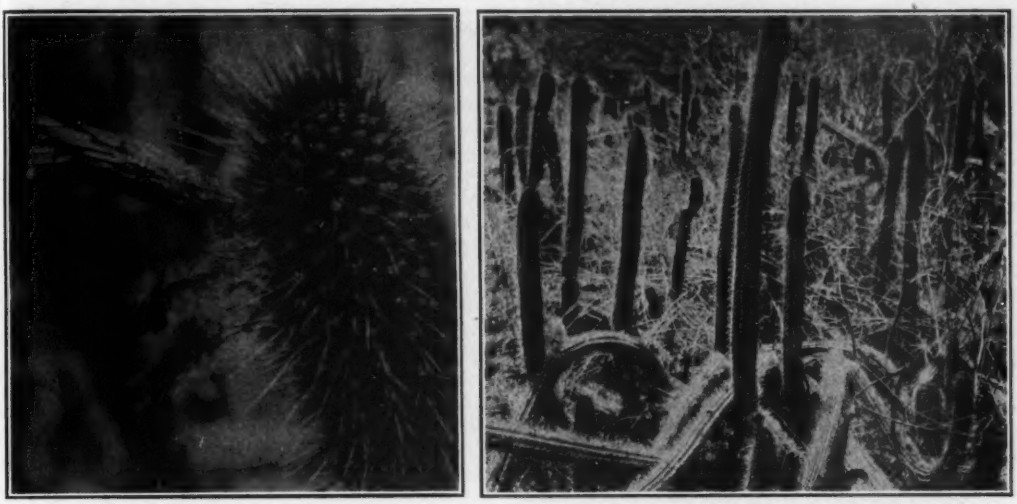


FIG. 38

Borzicactus morleyanus as pictured in Vol. II, "The Cactaceae" where Britton and Rose described it as a new species. LEFT: Top of flowering stem. RIGHT: An interesting habitat photo by George Rose taken in Sibambe, Ecuador.

fifteen spines which are acicular, bristly rather than stiff, and are brown in youth. Later they fade to gray or white. One spine is somewhat longer than the others, reaching a length of two inches.

The flowers are carried near the top of the plant. They are narrow-tubular, slightly zygomorphic, not opening widely at the mouth, although the picture will show the petals spreading somewhat. Scales on the tube are greenish with a mixture of gray and black hairs in the axils. The flowers are three inches long. There is no ring of hairs closing the tube at the base, but the crowded filaments which occur in several series do so.

The species was named for Mr. Edward Morley of Huigra, Ecuador. Mr. Morley operated a hotel at Huigra and was of great assistance to Dr. Rose during his visit here.

BLATTER FUR SUKKULENTENKUNDE

Curt Backeberg has published the first number of this new "Addenda to the Bulletin for Cactus Research" (German only). This limited edition will be published twice a year. The first consists of eight pages with 5 photos and 3 drawings reporting on new genera and species, new problems of plant distribution, etc. The new genera are: *Haseltonia, Neocardenasia* (Bolivia), *Neodawsonia,* and *Polaskia* (Mexico). This issue also includes a new *Mammillaria* and a new *Coryphantha,* distribution of Cactaceae, succulent Euphorbiaceae, and Mesembryanthemaceae, etc. Subscriptions may be sent to Scott E. Haselton, Box 101, Pasadena, California—price $2.00 per year.

AMATEUR COLLECTIONS

The JOURNAL needs descriptions of amateur collections to show other readers how plants are grown in various localities. Tell us your experiences, use common names if you wish. Tell where your plants are grown in the summer and what winter care they receive. Which ones flower and what is your advice to a beginner. If you have good, clear photographs of plants or your collection, we will be glad to consider using them.

CORRECTION

In our statement that the JOURNAL has had the second longest life of any cactus magazine, we failed to consider the magazine of the Dutch Society which was started in 1919. This year celebrates its 30th year with 1000 members. Mr. Uitewaal, Editor of "Succulenta," states that there is hardly a house in Holland that does not have succulent plants in its windows.

HONORARY LIFE MEMBERSHIP

The Denver Cactus and Succulent Society kindly voted an Honorary Life Membership to Your Editor on Feb. 1, 1949. The membership card reads, "This certifies that The Denver Cactus and Succulent Society has granted until 2000 AD honorary full membership to Scott E. Haselton as an active hobbiest in cacti and succulents." ROCKY MOUNTAIN EMPIRE CACTOPHILES

OKLAHOMA MEETING

Mr. and Mrs. Charles Polaski of 1630 Exchange Avenue, Oklahoma City, are progressive collectors that you should contact. Recently they sponsored a Kodachrome showing at the Historical Building and all reports indicate much enthusiasm.

QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

Question: When should I start watering my Lithops in the spring? Mrs. L. T.

Answer: In the wild state, Lithops do their growing during our winter. However, in cultivation we have to modify our treatment. During the dark dull days of winter we water as seldom as possible and then only when it is clear and bright so all surface moisture will evaporate before night. When the days are longer in March, a little more water may be given so that by April and May the growths started last fall should be maturing. The growth for the year is generally matured by June when they should be given less water. During July and August they should be kept quite dry as this is their normal rest period. Give them plenty of fresh air and light at all times.

Question: Can you name a few of the most easily flowered cacti for the beginner? J. R. S.

Answer: Perhaps the easiest to flower of all are Gymnocalyciums or Chin Cacti. Such species as *G. Damsii,* or the Davis Chin Cactus, flower on the new growth and do so all summer long. They are quite easily grown, thriving in sun or shade. The blossoms are quite large for the size of the plants. *G. Mihanovichii,* the Striped Chin Cactus, has pale yellow or chocolate tinted blossoms and is prettily banded in a zig-zag pattern. *G. Fleisherianum,* the Pink Chin Cactus, has pink or white blossoms. *G. Friederickii,* the Rose Plaid Cactus, is a tiny species with large, bright, clear pink blossoms. The plant is very brightly banded.

Question: How often should I repot my Easter Lily Cactus? L. A. F.

Answer: Easter Lily Cacti, or Echinopsis, are strong rooted plants and like a good, moderately rich loam soil with some sand added. They may be repotted in middle spring months. Not too early but just as the weather has settled down which will depend on your location. If the plants are healthy and growing well, they may be simply shifted to a larger pot, adding fresh loam and seeing the drainage is replaced. If the plants are yellow or otherwise in poor condition, wash the roots clean and if they are knotty looking or if there are only a few large roots with no fine feeding roots, they should be cut back to within a half inch of the base. The plant should then be allowed to dry for a couple of weeks in an airy place. They may then be potted in a very sandy mixture or preferably in clean washed sand and left dry for another two or three weeks. They are then dampened (not

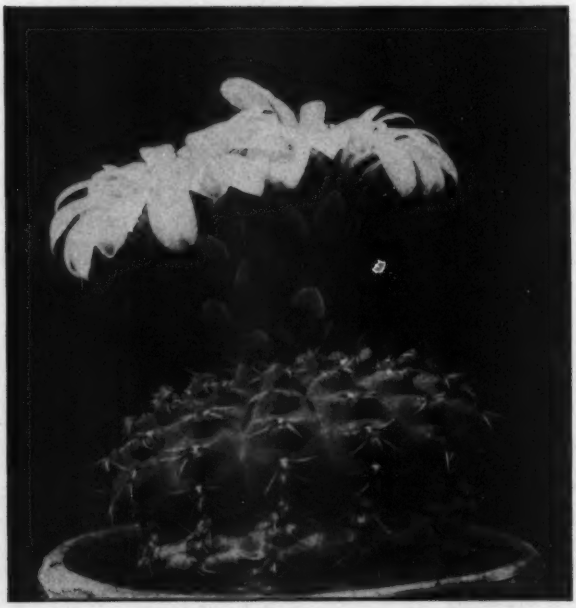


FIG. 39. *Gymnocalycium Quehlianus* var. *Zantnerianum.*

Two new varieties of *Gymnocalycium* were named by H. Schick in Yearbook II of the Swiss Cactus Society. The first, *G. Quehlianum* (F. Hge.) Berg. var. *Zantnerianum* Schick, resembles the species as it was first published by Haage, Jr., in his catalogue. Slight variations of this plant are in local collections. Named for the botanist and horticulturist Alfred Zantner, Tugolstadt, Danube. The second plant was *G. Quehlianum* var. *Rolfianum* " — easily distinguished by the blunt broad ribs which are only slightly chin-shaped, humped cross ridges, neither fringed nor toothed petals, and the ivory-colored stamens." Named for Schick's son, Rolf.

(These varieties are not available in the trade.)

wet) occasionally until well rooted, when they may be potted in richer soil.

Question: My Christmas Cactus dropped its buds and failed to flower. Why did this happen? Mrs. L. M. P.

Answer: Bud dropping in Christmas Cactus (Zygocactus) may be due to several causes. After cold weather sets in and houses are closed, the atmosphere is much dryer. This often causes the younger growth to drop. Sometimes fumes from gas or coal heaters will cause dropping. Many times also the plants are grown during summer in too shady locations and thus do not properly mature. Fresh air and a reasonable amount of humidity will prevent much of the trouble. Also see that during the summer and fall that the plants get plenty of fresh air and broken sunlight. In the fall, I like to see them turn a faint coppery color from the sun, which shows they are properly maturing their growth.

Please mail your questions or further comments for discussion to HARRY JOHNSON, *Johnson Cactus Gardens, Paramount, California.*

RARE SUCCULENTS

By H. JACOBSEN, Kiel, Germany

The works of Dr. Karl Von Poellnitz, the student of succulents who unfortunately perished during the war, were for many years closely associated with the succulent collection of the Botanic Garden in Kiel. Many of the new species described by him were cultivated there, and in this way the Kiel Botanic Gardens came into possession of many rare type plants. Unfortunately, due to the occurrence of the war, most of these plants were destroyed. Only a small part of these and other succulents could be saved. Meanwhile the greenhouses are again being rebuilt, and again filled with plants.

The type plants, however, are all preserved in photographs, part of which have not yet been published.

The following are short descriptions of some of these rare species:

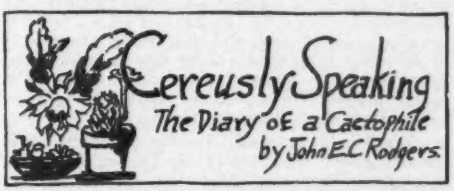
Crassula Jacobseniana von Poelln.. Fedde "Repertorium specierum novarum regni vegetabilis" XL (1936) 301. Cape Prov. Cradock. A small, erect shrublet 10-12 cm. high, somewhat branched near the top; stems cylindrical, almost woody, brownish below, with short hairs ca. 1 mm. thick; the lower leaves are rather loosely arranged, but in the upper part the stem is completely hidden by more or less opposite leaves which are arranged like shingles; leaves erect to nearly spreading, forming a four-angled column, somewhat shining, rather ovate at the base, connate, obtuse-triangular or obtuse, flat on both sides, rather thickened only at the base, 4 mm. long, 1.5 mm. wide, with minute papillae in longitudinal rows; flowers in small heads, 2-3 mm. in diameter, with a pedicel 2-3 mm. long, yellowish-white.

FIG. 40. *Crassula Jacobseniana.* Photo of type by Jacobsen.

The plant resembles the familiar *Crassula pyramidalis.*

Unfortunately, this plant was destroyed in the war. Whether it yet exists in other collections, I do not know.

SUCCULENT PLANTS—Jacobsen. The revised edition of the most complete book on the other succulents is now available. There are over 300 illustrations with descriptions of 1000 species; mentions as many more in the 293 pages. English edition $6.50. Special edition $6.00 (payable $2 per month for those who are budgeting books). Box 101, Pasadena, California.



The genus *Lophophora* is one of the most interesting cactus to the medical student and ethnologist because of its use in Indian rituals. The three species,

or one species and two varieties, are globular plants of a dull bluish green color with a thickened tap root. The tubercled to almost smooth plants are favorites in most collections. The tufts of hair in the areoles at the tips of the tubercles of *L. Williamsii* give the plants a bizarre look. The white to pink blooms appear from the thickly tufted central areoles.

Although we cannot speak of three species in the scientific sense at present, there is a definite move on the part of the dealers to list three, I have all three. My first *Lophophora Williamsii* was brought from Europe by Eugene Ziegler of Spencerport, New York, March, 1932. The original froze in 1936, but I have a seedling from it which is three inches across and is now 13 years old; it has tufted areoles as in Fig. 87 of Marshall and Bock. *L. Lewinii* does not have as many tubercles or "ribs" as *L. Williamsii,* in fact the one I have is "lettuce" green and does not have the tufted center nor the multiple areoles per "rib." It has three tubercles and five to seven ribs only while *L. Williamsii* has 11 to 13 ribs. A picture of the latter in "Texas Cacti" by Schultz and Runyan shows 8 ribs. Br. and R., Vol. III, pg. 84, shows 13 ribs or rows of tubercles the same as Marshall and Bock's and my original type. Tufts at the areoles of *L. Lewinii* are slightly hairy or lacking completely.

L. Tiegleri Werd. of Marshall and Bock, pg. 138, the original was found in seedlings grown from seed and sent to Eugene Ziegler by Fernando Schmoll, cactus dealer in Mexico (see JOURNAL Vol. I, No. 5-12 ads of Ziegler). Name should have been *L. Zieglerii* as it was named after Eugene Ziegler. I've seen the original seedling, a silvery gray-green with five ribs of three very fat tubercles. Little wool if any in the areoles.

The local names under which *L. Williamsii* is sold and "collected" is Peyote, Pellote, Sacred Mushroom, Mescal Button, and Dumpling Cactus. The blooming period of my plants has begun as early as January 10 and continued into the fall. This may vary but it corresponds roughly to the spring and summer season for this district.

The diseases that I have encountered are few. Most of the trouble is due to poor soils and drainage. Dry-rot in the root was caused by nematodes. The plant was cut back to clean tissue but it never regained its robust growth of pre-nematode days. No doubt it could not adjust to its loss of the tap root. Fungus seems to cause the gray corky patches at the areoles while thrip cause yellowish discoloration. These can be cleared up with a reliable fungus control spray and Black-leaf 40. Rot is the cactophiles worst enemy. Gravel under the plant and good soil drainage usually insure the plant a long life with few pottings. Plants may be soft to the touch but I find that this is not a disease but a sign of resting; but it is best to examine plants frequently.

In "Texas Cacti," page 105, the authors say, "The habitat of *L. Williamsii* is like most of the other cacti. It occurs in colonies on certain hillsides and then may not occur for another ten miles. It is at home in sandy loam or clay flats, but also occurs in gravel soils, mostly on the south side of gravel hills, rarely on top." Marshall and Bock recommend a loose, not too rich soil with considerable gypsum added; water freely in warm weather.

My soil is on the sandy side for this genus but it contains garden loam, old plaster (pulverized), sand and gravel. When I'm able to get gypsum that has stood out in the air for a while, I use it (called plaster of Paris in commerce); it does not cake then. There are several cacti that like gypsum besides the *Lophophora* and it is also used on meadow grasses by farmers in some districts in place of limestone.

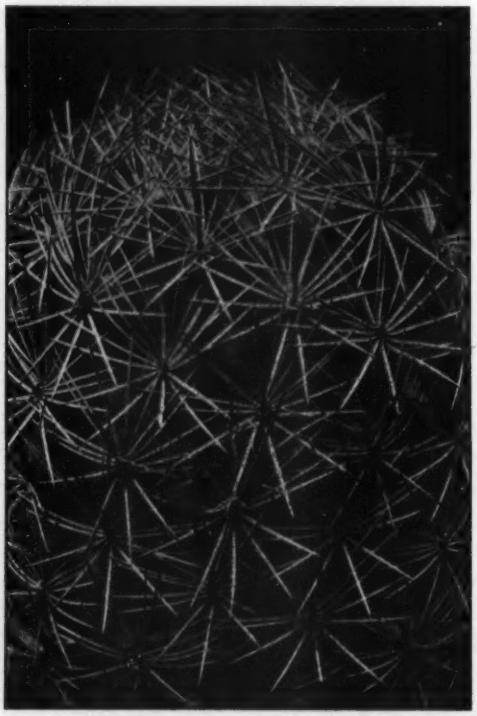
Lophophora plants are suitable for window gardens because they seldom exceed three inches in diameter and can remain in the same pot for several years without repotting. Any of the plants in this genus grow well in the south-west, south, or east windows. I have seen them grow in poor light with little distortion due to etiolation for several years; it would have been better to move them outdoors in the summer.

The flowers vary from white through yellow to deep pink and from ½ to 1¼ inches in diameter. *L. Lewinii has* a yellowish white bloom which often has a pink cast to it. *L. Tiegleri* has a creamy white bloom of medium size. The flowers are attractive in spite of their small size because of the day after day, week after week prodigality of these flowering.

Since most of my article is about *L. Williamsii* and its two varieties, I shall be compelled to add only a few more sentences to make *L. Williamsii* the Plant of the Month. The flowers open partially at first but later open almost flat. They may remain open all night. The shell pink color does not fade in strong light. I've seen plants with flowers ½ inch in diameter but both of my two 13-rib plants have blooms which open from ¾ to 1⅛ inches in diameter.

The narcotic properties of Lophophora are mentioned in medical references. The alkaloids of this Peyote or Mescal Button affect the optic nerves, producing colorful visions. The aborigines of North America used this plant in their religious rites but its use is now prohibited by law in some states.

JOHN E. C. RODGERS
1229 W. 8th St., Lorain, Ohio.



SPINE CHATS

LADISLAUS CUTAK

Convention-time is drawing near and those who plan to attend will get a big thrill seeing the Arizona cacti for the first time in their natural element. The tall Saguaros, tree Chollas, bushy Prickly Pears, squat Barrels and clustering Hedgehogs will be noticed first because of their size and grotesqueness; but the less conspicuous cacti will offer their share of thrills and invite a hunt for them. In the hills near Vail, between Benson and Tucson, in southeastern Arizona one can search for the elusive *Echinomastus erectocentrus*. This dwarf of a cactus is of globular to short-cylindric shape, 3 to 6 inches high in maturity, producing flowers that give off a delicate fragrance.

The average *Echinomastus erectocentrus* is 10 cm. high and 7 cm. broad. The plant body is of a pale bluish-green, composed of 21 ribs which tend to spiral and which are low and made up of closely set tubercles. In each areole are found 13 to 14 radial spines; these straight, acicular, white in the basal portion and purplish above, usually 10 to 15 mm. long. Central spine is solitary but quite often two centrals may appear. It is erect, slightly swollen at the base, ascending, not much stouter than the radials but longer, from 1.5 to 2.5 cm. long. The flowers begin to make their appearance in the latter part of April and last four days, opening in the morning sunlight and closing at night. They are borne at the base of grooves which extend from the spine-areoles at the top and are quite large, 5 cm. long and equally as broad when fully expanded, of a pink color and somewhat fragrant. The outer perianth-segments are narrower than the inner and possses a purplish-brown stripe through the middle on the backside. The basal portion of the pinkish inner perianth-segments is brownish-green which imparts a pleasingly colored center. Stamens are short, greenish yellow with light yellowish anthers. The style is longer than the stamens, very pale green at the base or white throughout, 1 mm. thick. Stigma lobes 9, deep crimson, about 3 mm. long. Scales on the ovary are ovate and scarious.

The generic name *Echinomastus* refers to the spiny tubercles of the plant, while the specific name *erectocentrus* alludes to the erect position of the central spine. *Echinomastus erectocentrus* is strictly a desert species and, therefore, will require very little water and a soil mixture that is definitely porous, composed of gravel, broken rock, sand and ordinary soil from your yard.

* * *

Had not Tom Gill cycled he might still be raising geraniums, cyclamens, primulas and other such flowers in his house and garden in England. But the fact that he was cycling one holiday along the coast changed his entire gardening taste. Walking up a steep hill near Weymouth, he came upon a cottage with a lot of queer plants in the window. They attracted him at first glance and he stopped to take a good look, remaining for a long time, finally meeting the owner, a kindly old woman, who invited him inside. The old lady presented him with two cuttings, which later he found out to be *Gasteria verrucosa* and *Aloe variegata*. After that Tom Gill started buying small cacti and other succulents, chiefly from Woolworths, and soon acquired a collection about which he knew very little because he didn't know of any literature on them. Fortunately, he got hold of E. Lamb's book, "FLOWERING YOUR CACTI," and learned of the existence of the Cactus and Succulent Society of America, which he promptly joined in 1944. The membership in our Society has increased his interest in the spiny plants a hundredfold. He is also active in one of the branches of the National Society of Great Britain.

Tom Gill was born in Preston, Lancashire, and studied engineering, becoming a draughtsman. He came to Wolverhampton in 1934, married in 1939, and has made his home there ever since. Mrs. Gill was formerly a school teacher and had taken up botany, so now when Tom is stuck with some knotty problem he goes to his wife to have it solved. Mr. Gill, from little on, was interested in anything that grew and has raised most of the usual garden and greenhouse plants, but since the cycling episode the cacti and other succulents have ousted everything else from his greenhouse and with him reign supreme.

* * *

"The Grasslands of the Southern Interior of British Columbia" is an interesting article written by E. W. Tisdale in the October, 1947, issue of Ecology (28: 346-382). It presents the results of a study of the native grasslands of Interior British Columbia. These grasslands, which cover an area of approximately three and one-quarter million acres, are of great economic importance as pasturage for livestock. The area is rugged in topography, representing an ancient plateau which has undergone subsequent uplift and erosion. The vegetation shows a strong resemblance to that of areas to the south, in Eastern Washington and Oregon, Idaho and Northern Utah. Ecologically the whole region is characterized by the dominance of relatively tall-growing perennial bunch grasses with semi-desert shrubs occurring in the more xeric portions. The desert shrubs are *Chrysothemnus naseosus*, the rabbit brush, and *Artemisia tridentata*, the sage-brush. As a result of the various studies three main divisions of the grassland vegetation, each with certain constituent communities, were recognized: lower grassland zone, middle grassland zone and upper grassland zone. *Opuntia fragilis* and a number of annuals composed the bulk of the herbaceous cover in the middle grassland zone.

* * *

The Palestine-born young Jew is nicknamed "Sabra" after the prickly, wild-growing, somewhat tasteless fruit of the cactus plant. This information was gotten from a series of articles on The Promised Land by Arthur Koestler. In physical appearance the average young sabra is almost invariably taller than his parents, robustly built, mostly brown-haired or blond and blue eyed. His most striking feature is that he looks entirely un-Jewish.

OPPOSITE PAGE

FIG. 41. *Echinomastus ecrectocentrus*. From "Cactaceae" by Marshall and Bock. (A revised edition of this book is being prepared. Ed.)

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BOOK NOTES

"SUCCULENT PLANTS," Illustrated with View Master. An interesting and authoritative book, by W. Taylor Marshall, on cacti and succulent plants. Here for the first time the reader may see full-color, photographic, Kodachrome illustrations of text material in the true-to-life realism of third dimension. The book chapters are: Succulence in Plants, Parallelism, Fasciation, General Culture, Succulent Plant Names, Fig Marigold Family, Century Plants, Desert Milkweeds, Pineapple Family, Cactus Family, Daisy Family, Orpine Family, Spurge Family, Candlewood, Lily Family. The 20 sterescopic reels which come with it, and are a part of this book, make possible the unusual illustrative method used. As each picture comes into viewing position in the View-Master stereoscope, information relative to the plant shown, appears in the caption window of the viewer. No other projector, screen, or equipment is needed. 140 three-dimension pictures in full color with viewer and cloth bound book—all for $12.00. Postage 50c, foreign 75c.

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ENGLAND REPRESENTATIVE

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NEW JOURNAL

The Cactus and Succulent Society of New Zealand issued a "Special Issue" of their Journal. This 16-page issue includes various articles of general interest and a feature article on New Zealand Native Succulents. Amateurs will find many things of interest including Mr. Shurly's article "Choosing Cactus." Mrs. P. J. Bruce, the Editor, has sent several copies to this office so that orders may be filled promptly. Mail 35 cents for a copy. Box 101, Pasadena, Calif.

This issue of the Journal carries feature advertisements for dealers who are members of the Society. We need you dealers and you need us. Tell our members what you have for sale in a one or two inch ad in the next issue ($3 per column inch). Deadline May 5th. Mail your test ad to the CACTUS JOURNAL, Box 101, Pasadena, California. If purchasers will please mention the JOURNAL when buying from the above dealers it will be to our mutual advantage.

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